

APPENDIX I

July 1, 2007

Report on Selected Algodones Dunes Insects

by

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In September, the Bohart Museum of Entomology initiated a status review of 19 Algodones Dunes insect taxa pursuant to an Assistance Agreement (BAA033001/BAA06044) issued under the umbrella Cooperative Agreement for the Californian Cooperative Ecosystems Unit (CESU). Hereafter, the 19 insects included in this CESU project list (most of which were thought to be endemic to the Algodones Dunes) are referred to as “CESU insects”. The information is organized in the form of data sheets for each species, which include (a) taxonomy, (b) collection localities, (c) known or inferred distribution, (d) life history, (e) habitat requirements (including vegetation associations and known or suspected host plants), (f) population status and trend, and (g) sensitivity to habitat change or disturbance. In addition, a distribution map has been compiled for each species based on published collection information and museum specimens.

In the process of gathering this information we encountered a number of species that need to be discussed as well. All of the species covered in this study are listed in Table 1, which gives their endemic status and what we know of their natural history. We discovered that two of the CESU insects (*Dasymutilla imperialis* Manley and *Dasymutilla nocturna* Mickel) are not endemic to the Dunes, but are much more widespread. Six additional species were found to be endemic to the Dunes and one genus of tiphiid wasp is found nowhere else; these are discussed in Section 2. In Section 3, we have included information on non-CESU species that have been described in Wikipedia.org and AllExperts.com, as endemic to the Algodones Dunes but are in fact much more widespread. We have been unable to see representatives of some species as a result we have no photographs of the following species: *Apiocera warneri* Cazier, *Efferia macroxzipha* Forbes, all *Perdita* species, *Trigonoscute rothi algodones* Pierce, *T. r. imperialis* Pierce and *T. r. punctata* Pierce.

This study was made possible by the cooperation of a number of scientists, museums and collection managers. Specimen data was compiled from collections in the Bohart Museum of Entomology, University of California, Davis (S. L. Heydon); California Academy of Sciences, San Francisco (N. Penny); California State Arthropod Museum, California Department of Food and Agriculture, Sacramento (CDFA) (S. Gaimari); Entomology Research Museum, University of California, Riverside (D. Yanega); Essig Museum, University of California, Berkeley (S. Barr), and Natural History Museum of Los Angeles (W. Xie). Additional specimen information was provided by James Pitts (Utah State University), Logan, Donald Manley (Clemson University), James M. Carpenter (American Museum of Natural History), Charles Bellamy (CDFA) and Eric Fisher (CDFA).

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Order HYMENOPTERA

Algodones Perdita
***Perdita algodones* Timberlake**
 (Hymenoptera: Andrenidae)

Taxonomy

Perdita algodones Timberlake 1980:26. Holotype male; California: Imperial Co., 3.5 mi. northwest Glamis (types are deposited in the California Academy of Sciences, San Francisco, on permanent loan from the University of California, Riverside).

Diagnostic features

According to Timberlake (1980) this species is closest to *Perdita pectidis* Cockerell. It differs from that species by the more closely punctured and hairier frons and mesoscutum, the whitish wings, and different markings on the abdomen. Body length is 4-4.5 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co., 3.5 mi. northwest Glamis, 1 mi. west Glamis, 3 mi. west Glamis. The species is known from the type series, which was collected in April.

Natural history

Nest sites. Unknown. However, where known *Perdita* species nest in the ground.

Nectar plants. Unknown, but *Perdita* species are nectar and pollen host plant specific.

Habitat requirements. The species is only recorded from the Algodones Dunes.

Collecting techniques. Hand-netting, malaise trap, yellow bowls.

Population status

Unknown.

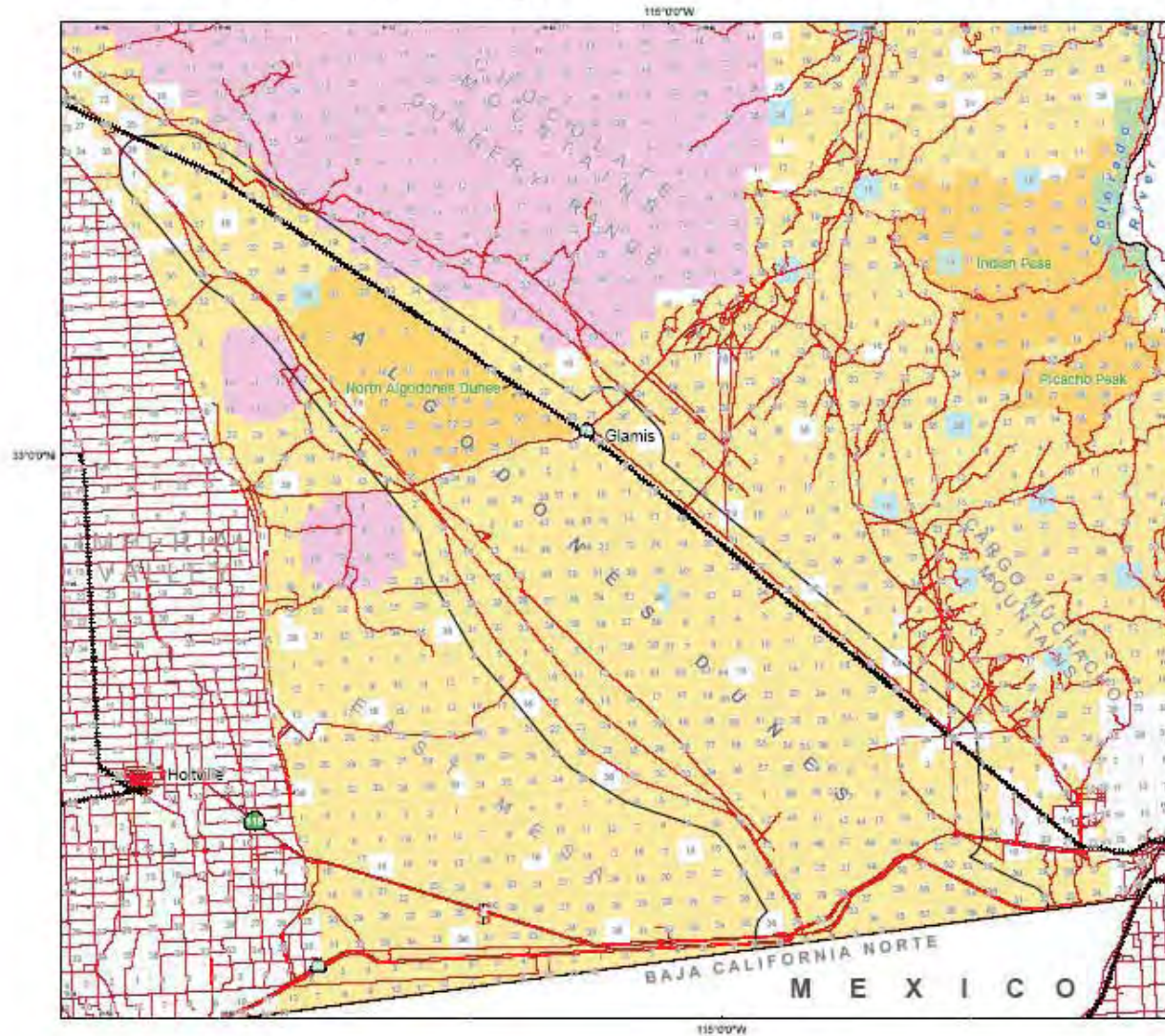
Sensitivity to disturbance

Anything adversely affecting the nectar plants they visit, or their nest sites could seriously impact these bees. How significant any such habitat disturbance would be to this species would depend on the number of plants affected and the severity of the impact to individual plants.

Information sources

No specimens have been seen. Information is from Timberlake (1980).

Distribution Map for Algodones Perdita, *Perdita algodones*



ABID
BLM 2007

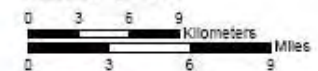
Location



Legend

- > Perdita algodones
- Algodones Dunes Boundary
- California State Line
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source



US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 475-4860
www.ca.blm.gov
Data Prepared: 04/2007
Project: 02_perdita_algodones_20070615c1a

Glamis Perdita
***Perdita glamis* Timberlake**
 (Hymenoptera: Andrenidae)

Taxonomy

Perdita glamis Timberlake 1980:16. Holotype male; California: Imperial Co., Glamis (types are deposited in the California Academy of Sciences, San Francisco, on permanent loan from the University of California, Riverside).

Diagnostic features

This is a distinctive species; the males are macrocephalous, with the head often greatly broadened anteriorly, with cheeks wider than the eyes and the mandibles thickened and apically incurved and attenuate. Females are undescribed. The body length is 5 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co.: Glamis. The species is only known from the type series (two individuals). *Perdita glamis* was collected in the month of June.

Natural history

Nest sites. Unknown. However, where known *Perdita* species nest in the ground.

Nectar plants. Unknown, but *Perdita* species are nectar and pollen host plant specific.

Habitat requirements. Endemic to the Algodones Dunes.

Collecting techniques. Hand netting, malaise trap, yellow bowls.

Population status

Unknown.

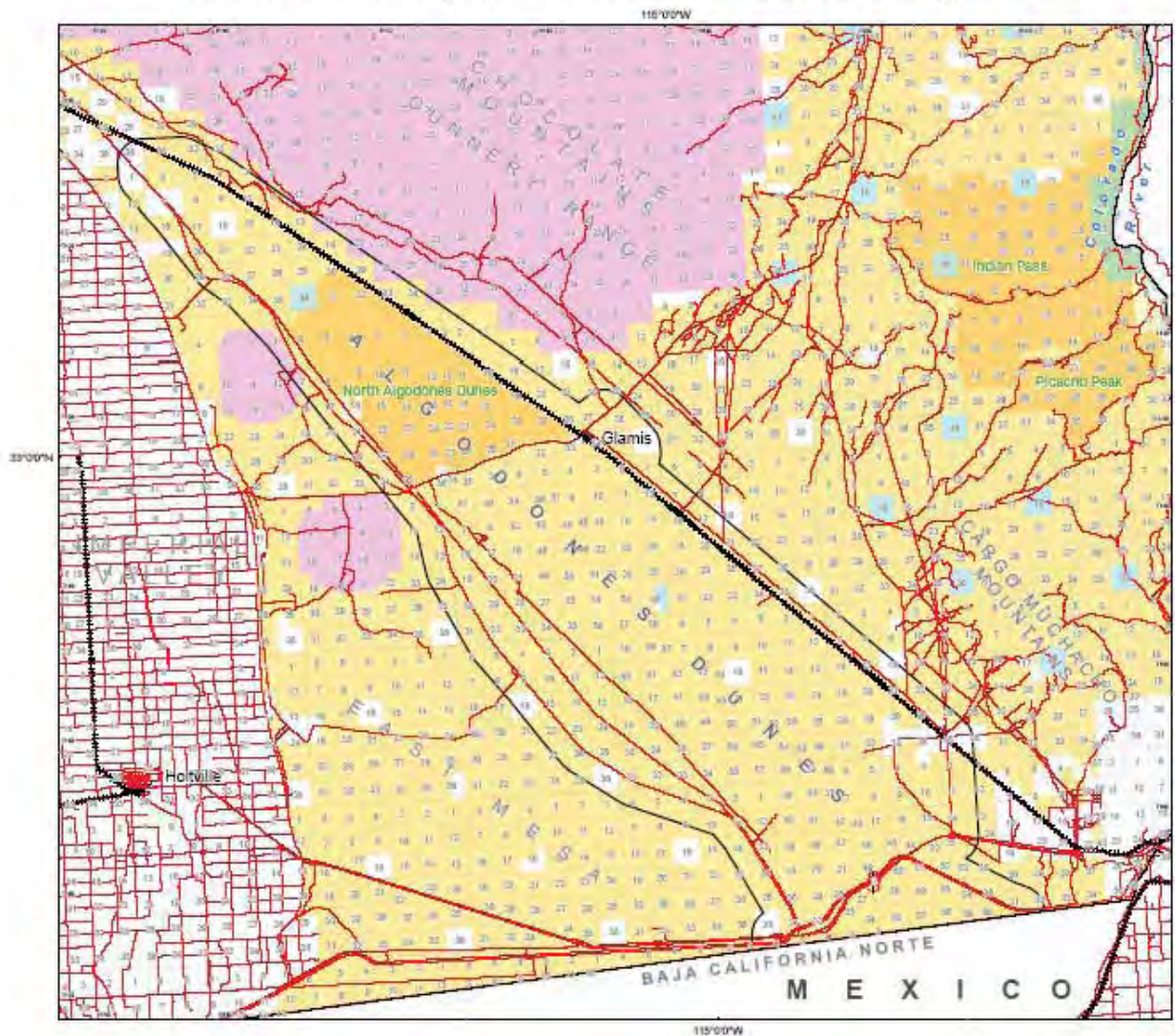
Sensitivity to disturbance

Anything adversely affecting the nectar plants they visit, or their nest sites could seriously impact these bees. How significant any such habitat disturbance would be to this species would depend on the number of plants affected and the severity of the impact to individual plants.

Information sources

No specimens have been seen. Information is from Timberlake (1980).

Distribution Map for Glamis Perdita, *Perdita glamis*



ADID 2007 BLM

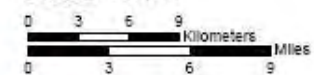
Location



Legend

- > *Perdita glamis*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
- BLM
- Land Ownership**
- Bureau of Land Management
- Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- State Lands
- County / City / Regional
- Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 975-4460
www.blm.gov
Data Prepared: 6/4/2007
Project: 65_perdita_glamis_33070615c4

Glamis White-faced Bee
***Habropoda* n. sp.**
 (Hymenoptera: Apidae)

Taxonomy

This is an undescribed species of *Habropoda* most closely related to *pallida* (Timberlake).

Diagnostic features

This species has dense whitish hair on the thorax and in bands on the otherwise dark abdomen. Body length is 10-12 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co.: Glamis; 1 specimen was seen, collected in the month of April.

Natural history

Nectar plants. Unknown.

Habitat requirements. Endemic to the Algodones Dunes.

Collecting techniques. Hand netting.

Population status

Unknown.

Sensitivity to disturbance

Anything adversely affecting the nectar plants they visit, or their nest sites could seriously impact these bees. How significant any such habitat disturbance would be to this species would depend on the number of plants affected and the severity of the impact to individual plants.

Information sources:

A single specimen in the Bohart museum of Entomology, University of California, Davis.

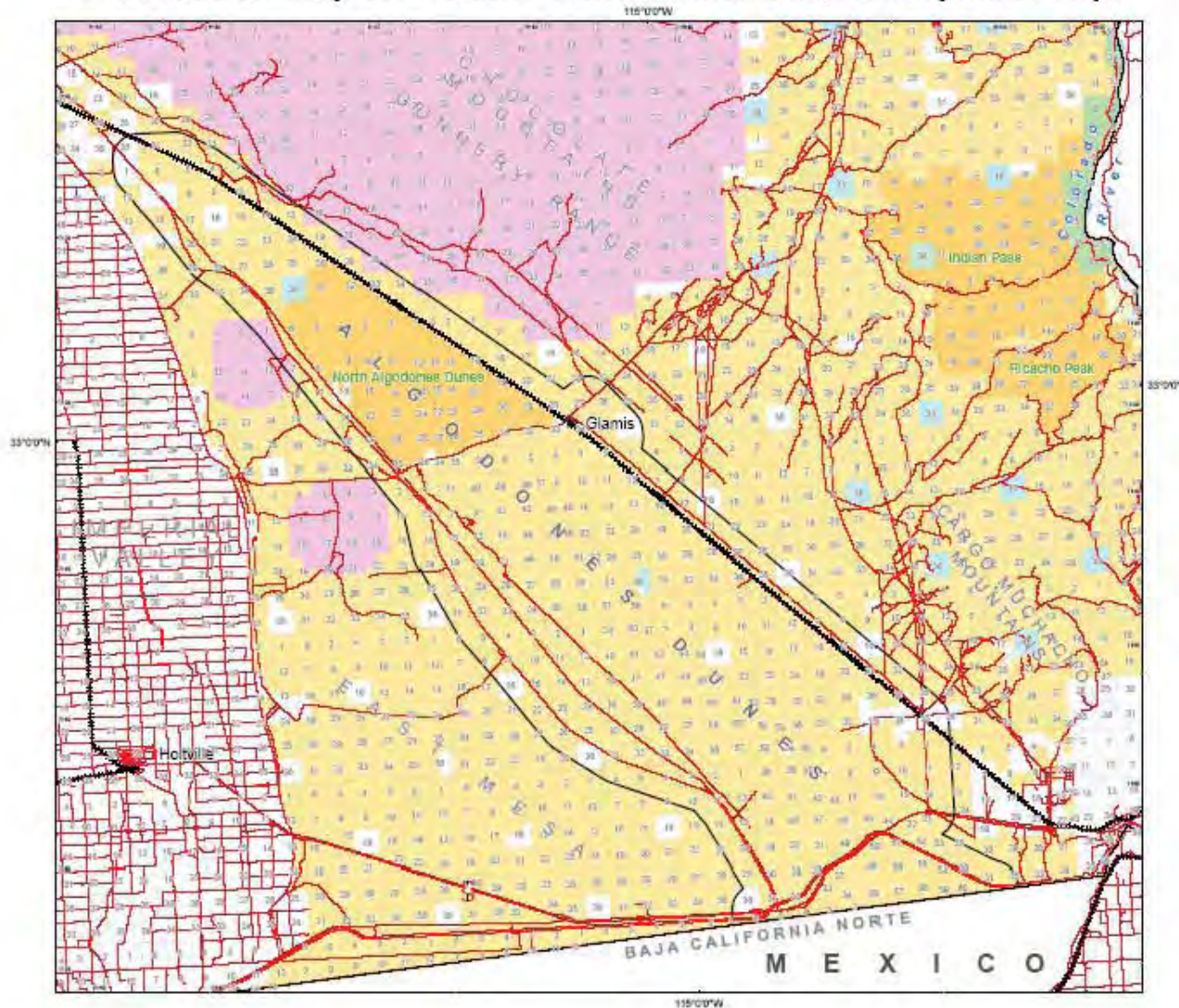


Habropoda n. sp., side view.



Habropoda n. sp., top view.

Distribution Map for Glamis White-faced Bee, *Habropoda n. sp.*



A2007BLM

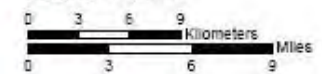
Location



Legend

- > *Habropoda n. sp.*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 674-4400
www.blm.gov
Date Prepared: 6/10/2007
Project: blm_habropoda_n_sp_00070015cds

Imperial Night Mutillid
***Dasymutilla imperialis* Manley & Pitts**
 (Hymenoptera: Mutillidae)

Taxonomy

Dasymutilla imperialis Manley & Pitts
 2004:647 Holotype male; California: Imperial Co., Glamis Dunes, 1 mi. west Glamis (types are deposited in the USDA-ARS Bee Biology and Systematics Laboratory).

Diagnostic features

The male is moderate-sized, about 10-12 mm long. The all black coloration, with strong bluish tints is diagnostic for the species. In addition, the wings are darkly tinted blackish. The female is unknown.

Collection localities/distribution

CALIFORNIA: Imperial Co., 1 mi. west Gecko Campground road near Hwy 78; MEXICO: Baja California Sur: Santiago, 30 km east Las Barracas, Sur Los Frailes; 8 specimens were examined. The species is collected in April and September.



Dasymutilla imperialis, male, side view.

Natural history

Host. Unknown. Members of this family are all parasitoids on other insects, particularly bees and sphecid wasps. *Dasymutilla* species are known to parasitize ground-nesting species of sphecid wasp, such as *Bembix* species.

Nectar plants. Unknown

Habitat requirements. Sand dunes from Imperial Co., California to southern Baja California Sur, Mexico.

Collecting techniques. Specimens have been collected in yellow pan, pitfall, malaise and black light traps.

Population status

Unknown.

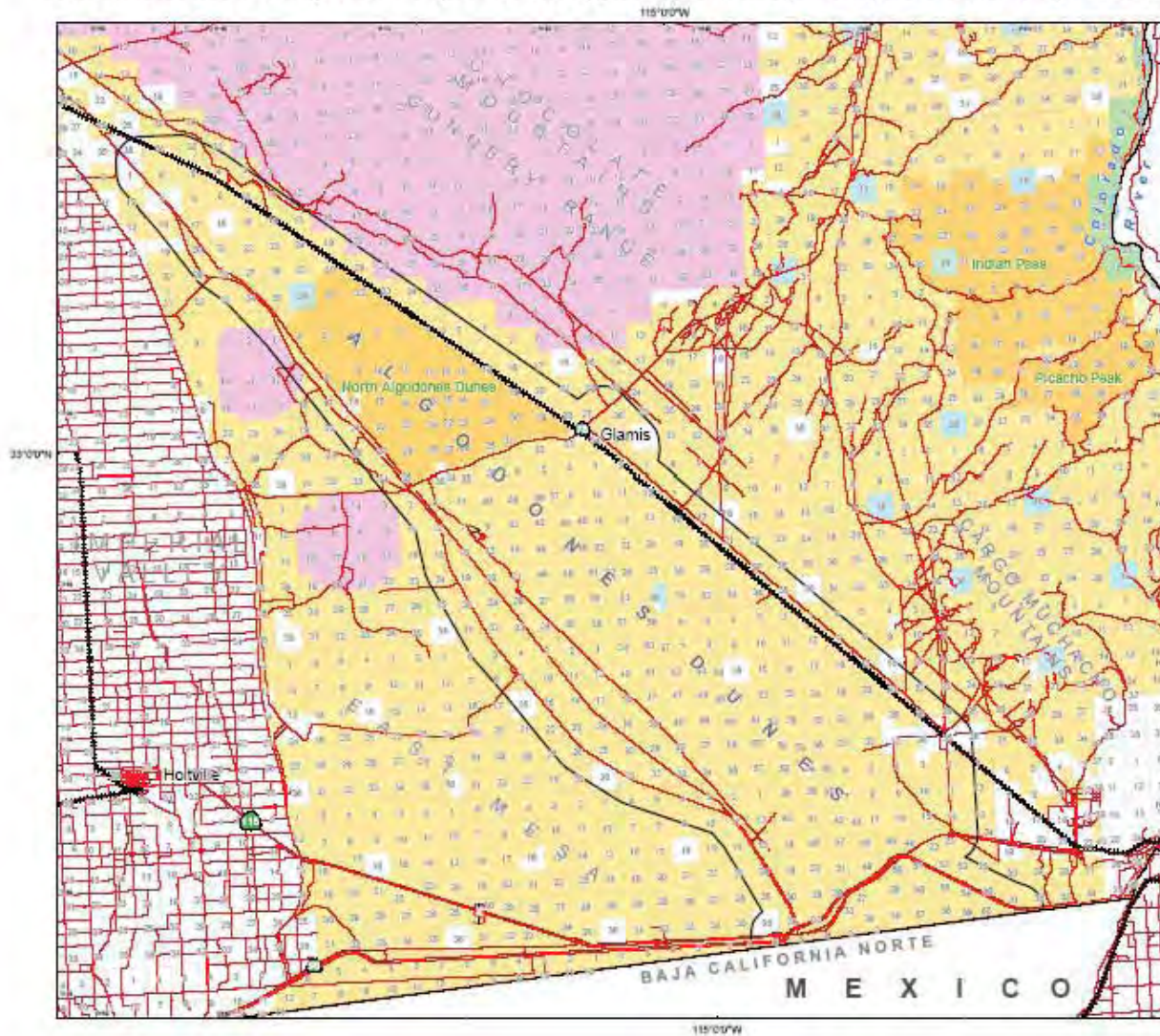
Sensitivity to disturbance

Unknown.

Information sources

Specimens were examined in museum collections of the Essig Museum, University of California, Berkeley and Natural History Museum of Los Angeles. Information was also taken from Manley and Pitts (2004).

Distribution Map for Imperial Night Muttled, *Dasymutilla imperialis*



2007 BLM

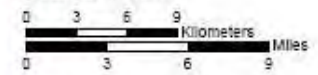
Location



Legend

- > *Dasymutilla imperialis*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness
 - BLM
- Land Ownership
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
95834-6400
www.blm.gov
Date Prepared: 6/12/2007
Project: 05_dasymutilla_imperialis_20070901

Nocturnal *Dasymutilla*

Dasymutilla nocturna Mickel

(Hymenoptera: Mutillidae)

Taxonomy

Dasymutilla nocturna Mickel 1928:279. Holotype female; California: Imperial Co., Andrade, Colorado Sand Desert (types deposited in the University of Minnesota and Cornell University).

Dasymutilla paranocturna Barr & Hurd 1947:21. Holotype female; California: San Bernardino Co., 5 mi northeast Yermo (type deposited in the California Academy of Sciences). Synonymized by Manley 1999.

Dasymutilla subhyalina Mickel 1928:21. Holotype male; California: Imperial Co., Andrade (type in the University of Minnesota). Synonymized by Manley 1999.

Diagnostic features

The most distinctive feature of this species is the black and white coloration in both sexes. Males are winged, females are wingless. These wasps are 9-13 mm long.

Collection localities/distribution

USA: ARIZONA: Yuma Co.: Yuma; CALIFORNIA: Imperial Co., Glamis, 2.5 mi ne Glamis, 6 mi w Glamis, 3 mi n Glamis, 3 mi nw Glamis, 5 mi n Glamis, 10 mi n Glamis, Bard, Andrade; MEXICO: SONORA: 6 mi n El Golfo; 84 specimens are known. The species has been collected in the months of April through October.

Natural history

Host. Unknown. Members of this family are all parasitoids on other insects, particularly bees and sphecoid wasps.

Habitat requirements. Sand dunes, from the Algodones Dunes south to northern Sonora, Mexico.

Collecting techniques. Specimens have been collected in yellow pan, pitfall, malaise and black light traps.

Population status

Unknown.

Sensitivity to disturbance

Unknown.

Information sources



Dasymutilla nocturna, male side view



Dasymutilla nocturna, male, top view.



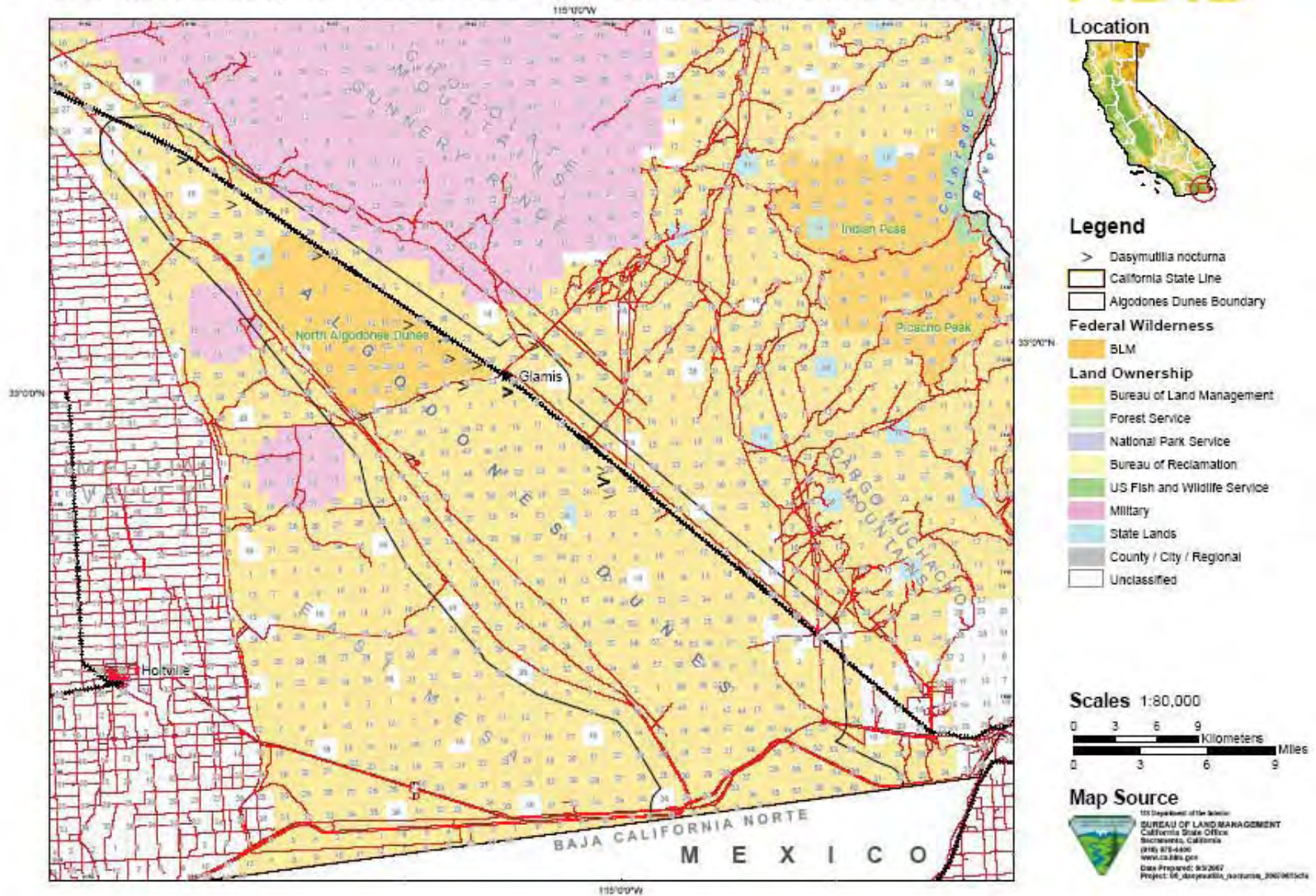
Dasymutilla nocturna, female, side view.



Dasymutilla nocturna, female, top view.

Specimens were examined from museum collections in the Bohart Museum of Entomology, University of California, Davis; State Collection of Arthropods, California Department of Food and Agriculture, Sacramento. Information was also taken from Barr and Hurd (1947), Manley (1998, 2005) and Mickel (1928).

Distribution Map for Nocturnal Dasymutilla, *Dasymutilla nocturna*



Algodones Sand Wasp

Microbembex elegans Griswold

(Hymenoptera: Sphecidae)

Taxonomy

Microbembex elegans Griswold 1996:142. Holotype male; California: Imperial Co.: Glamis Dunes, 1.6 km w Glamis (the type series is deposited in the USDA Bee Biology & Systematics Laboratory, Logan, Utah).

Diagnostic features

This species differs from others in the genus by the presence of a carinate midcoxae and the distinctively modified male mid and hindlegs. Females have white rake spines on the foreleg and a forecoxal spine. Body length ranges from 9-12 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co.: 1 mi w Glamis, 4 mi south Ogilby; 11 specimens have been described, which were collected in the months of September and October. This is only one of two North American species with localized distributions; the rest are widely distributed.

Natural history

Nectar plants. Unknown.

Habitat requirements. This species is endemic to the Algodones Dunes. It has been collected nowhere else. According to Griswold (1996) *elegans* is restricted to dune areas with active slip faces, around the base of shrubs where detritus accumulates. These wasps are scavengers, feeding their larvae on dead and dying insects they find on the ground. The shallow nests are built in the soil and are provisioned with dead insects.

Collecting techniques. Malaise trap, hand netting.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that adversely affects their nest and foraging sites in the sand could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of foraging sites affected and the severity of the impact to these foraging sites. Griswold (1996) commented that no specimens were found in a search of areas with high off-road vehicle use and no vegetation.

Information sources



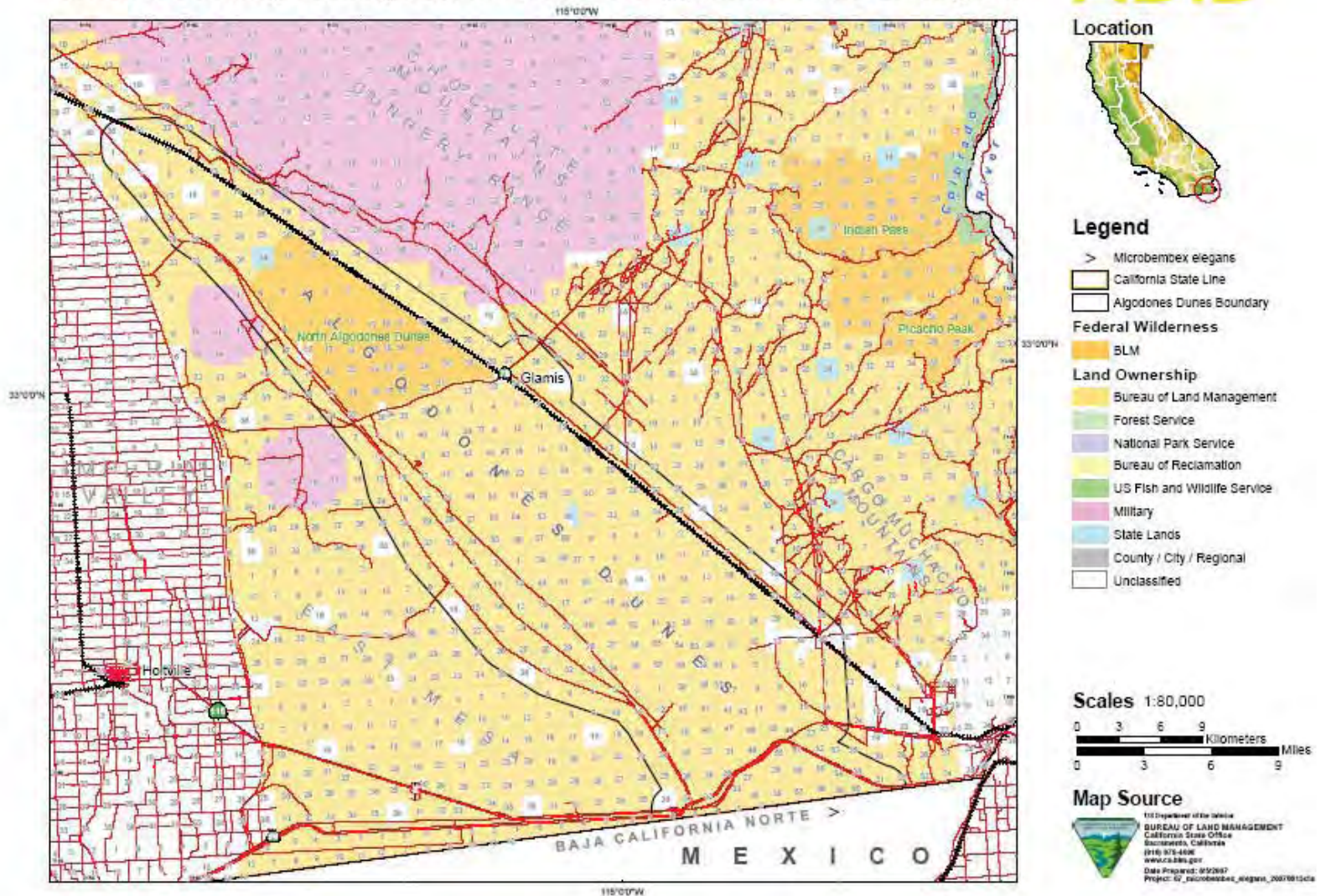
Microbembex elegans, side view.



Microbembex elegans, top view.

Information came from Griswold (1996) and collection data from Terry Griswold.

Distribution Map for Algodones Sand Wasp, *Microbembex elegans*



Algodones Sand Wasp
***Stictiella villegasi* Bohart**
 (Hymenoptera: Larridae)

Taxonomy

Stictiella villegasi Bohart 1982:596. Holotype male; California: Imperial Co., Glamis (types deposited at the Bohart Museum, University of California, Davis).

Diagnostic features

According to Bohart and Gillasp (1985) diagnostic features include a distinct arolium, curved male basitarsus, hindfemur with only a few small setae, untinted wing membrane, labrum shorter than eye height, and the female first flagellomeres as long as the scape. The body length averages 20 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co., Glamis, 3 mi. nw Glamis, Holtville, 20 mi. w Yuma, Yuma sand dunes; 8 specimens were seen, all from the type series. The species is collected in the months of October and November.

Natural history

Nest sites. Unknown for this species, but related species nest in flat or gently sloping sandy soil.

Prey species. Unknown for this species, other *Stictiella* species prey on butterflies and moths.

Nectar plants. Unknown.

Habitat requirements. Areas of flat or gently sloping sandy soil. This species is only recorded from the Algodones Dunes.

Collecting techniques. Hand netting, malaise traps.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their nest sites in the sand could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of foraging sites affected and the severity of the impact to these foraging sites.

Information sources



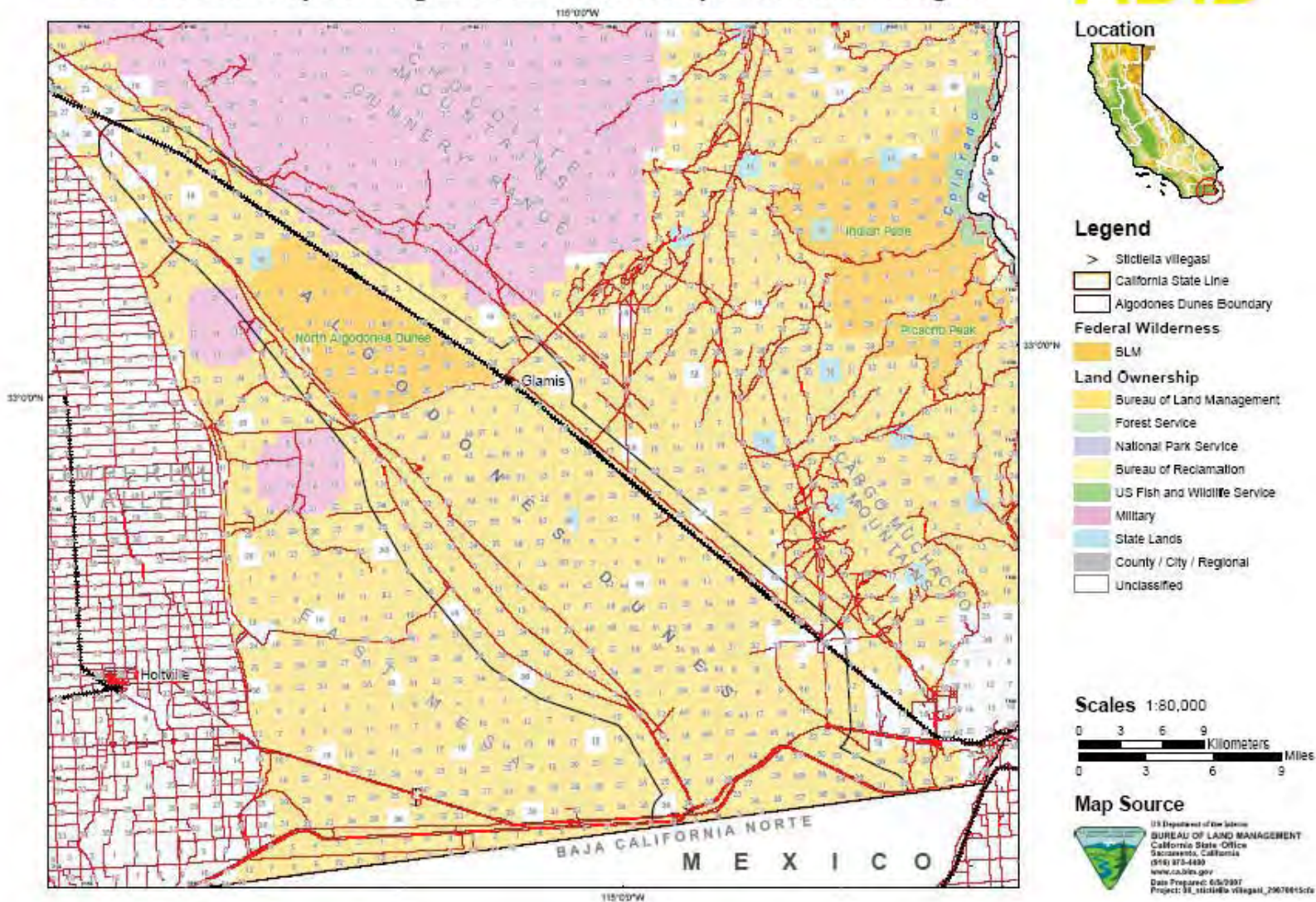
Stictiella villegasi, side view.



Stictiella villegasi, top view.

Museum specimens in the Bohart Museum of Entomology, University of California, Davis. Information was also taken from Bohart (1982) and Bohart and Gillaspay (1985).

Distribution Map for Algodones Sand Wasp, *Stictiella villegasi*



Algodones Euparagia
***Euparagia* new species**
 (Hymenoptera: Vespidae)

Taxonomy

This is one of ten species of the genus *Euparagia*. *Euparagia* is endemic to the southwestern region of North America. The genus belongs to the primitive, monotypic subfamily Euparaginae, in the family Vespidae. The genus was most recently revised by Bohart (1989), but is undergoing revision by James M. Carpenter, American Museum of Natural History, New York.

Diagnostic features

These are small yellow, orange and black marked predatory wasps averaging 5-7 mm long.

Collection localities/distribution

CALIFORNIA: Imperial Co., sand dunes east of Brawley, one specimen: 7 mi w Glamis, four specimens: 2 mi w Glamis, one female: Riverside Co., 4 mi. E. of Indio, one specimen, San Bernardino Co., south side Kelso Dunes; 17 specimens were examined. The species was collected in the months of March, June and July.

Natural history

Nest sites. *Euparagia* nest in burrows in the ground.

Prey species. Other species of *Euparagia* are beetle predators.

Nectar plants. These wasps have been collected on flowers of *Coldenia plicata*, *Eriogonum deserticola* and *Tiquilia* sp.

Habitat requirements. loose sandy soil, dunes. These wasps are found on sand dunes east of Brawley, east of Indio, the Algodones Dunes and the Kelso Dunes.

Collecting techniques. Hand netting, malaise trap.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their nest sites in the sand could seriously impact the species.

How significant any such habitat disturbance would be to this species would depend on the number of foraging sites affected and the severity of the impact to these foraging sites.

Information sources



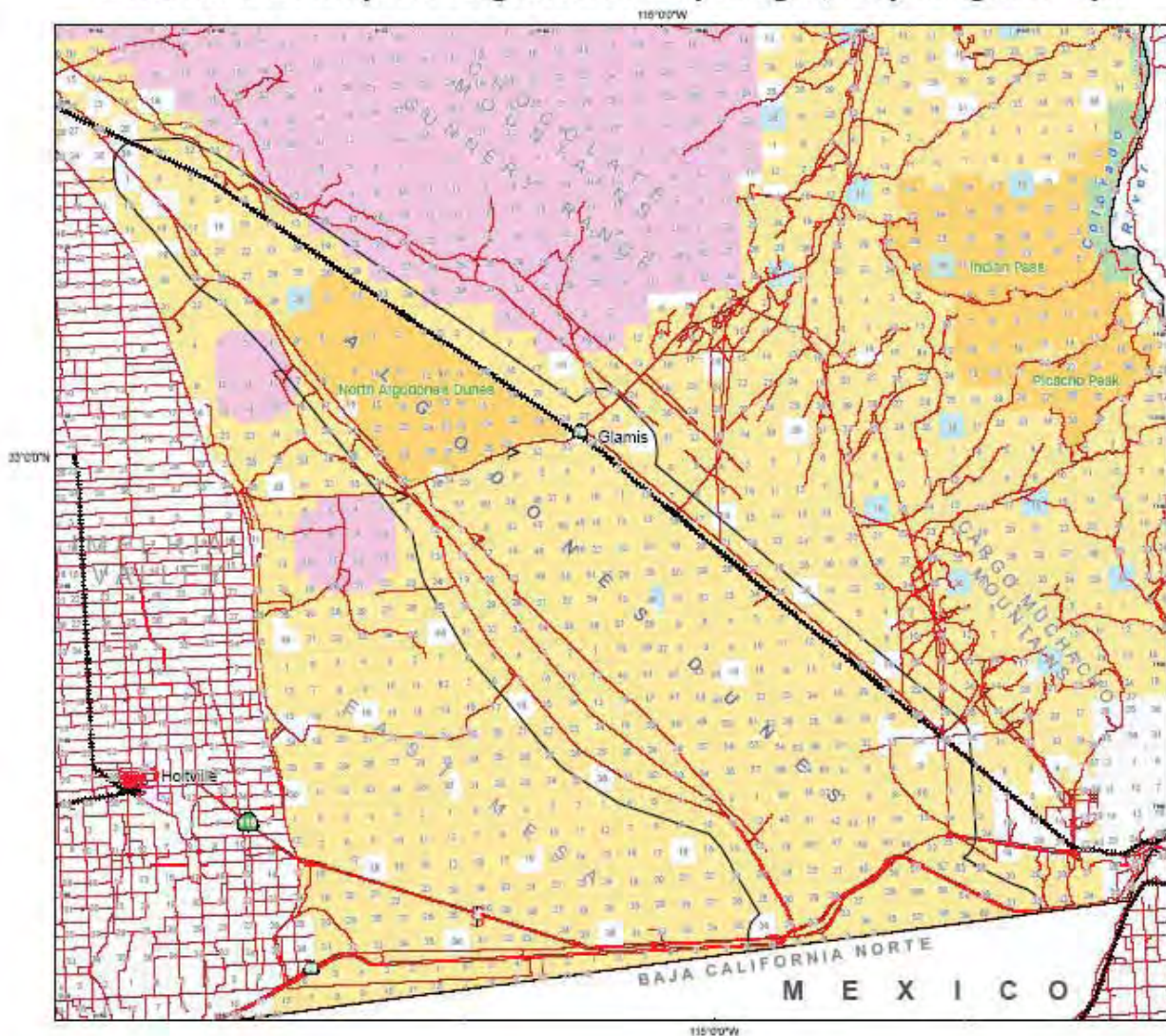
Euparagia n. sp., side view.



Euparagia n. sp., top view.

Specimens are in the collection of the Entomological Research Museum, University of California, Riverside. Specimen collection data was obtained from J. M. Carpenter.

Distribution Map for Algodones Euparagia, *Euparagia n. sp.*



ABDID
BLM 2007

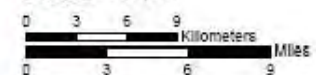
Location



Legend

- > *Euparagia n. sp.*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
- BLM
- Land Ownership**
- Bureau of Land Management
- Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- State Lands
- County / City / Regional
- Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 975-4400
www.ca.blm.gov
Date Prepared: 6/5/2007
Project: 92_euparagia_n_sp_33070615cd

Order Coleoptera

Algodones Sand Jewel Beetle

Lepismadora algodones Velten

(Coleoptera: Buprestidae)

Taxonomy

Lepismadora algodones Velten 1987 (in Velten and Bellamy 1987): 188. Holotype male; California: Imperial Co., Algodones Dunes sand hills, 7.2 mi w Glamis (the types are deposited in the California Academy of Sciences, San Francisco)

This species belongs to a monotypic genus that is only distantly related to any other North American groups. The nearest related group is the genus *Eudiadora* Obenberger, which is only known from Argentina.

Diagnostic features

The small size (around 3 mm long), “sand”-colored and white waxy underside will distinguish this species. In addition, adults are associated with *Tiquilia* plants.

Collection localities/distribution

CALIFORNIA: Imperial Co.: 7.2 mi. west Glamis, Hwy 178, 7.3 mi. west Glamis, 2 mi. north Glamis; 159 specimens are known. The species has been collected in the months between June and September. It is only known from the Algodones Dunes.

Natural history

Host plants. Adults are found in flowers of *Tiquilia plicata* (Boraginaceae). This beetle only flies during the hottest time of the day, between 10 am and 2 pm.

Habitat requirements. The larval host plant remains unknown and the adults have only been collected in and along the old canal on the west side of the dunes.

Collecting techniques. Sweep netting the host plant, *Tiquilia*.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants.

Information sources

Specimens were examined in museum collections at the University of California, Riverside, and State Insect Collection, California Department of Food & Agriculture, Sacramento. Information was also taken from Velten and Bellamy (1987).



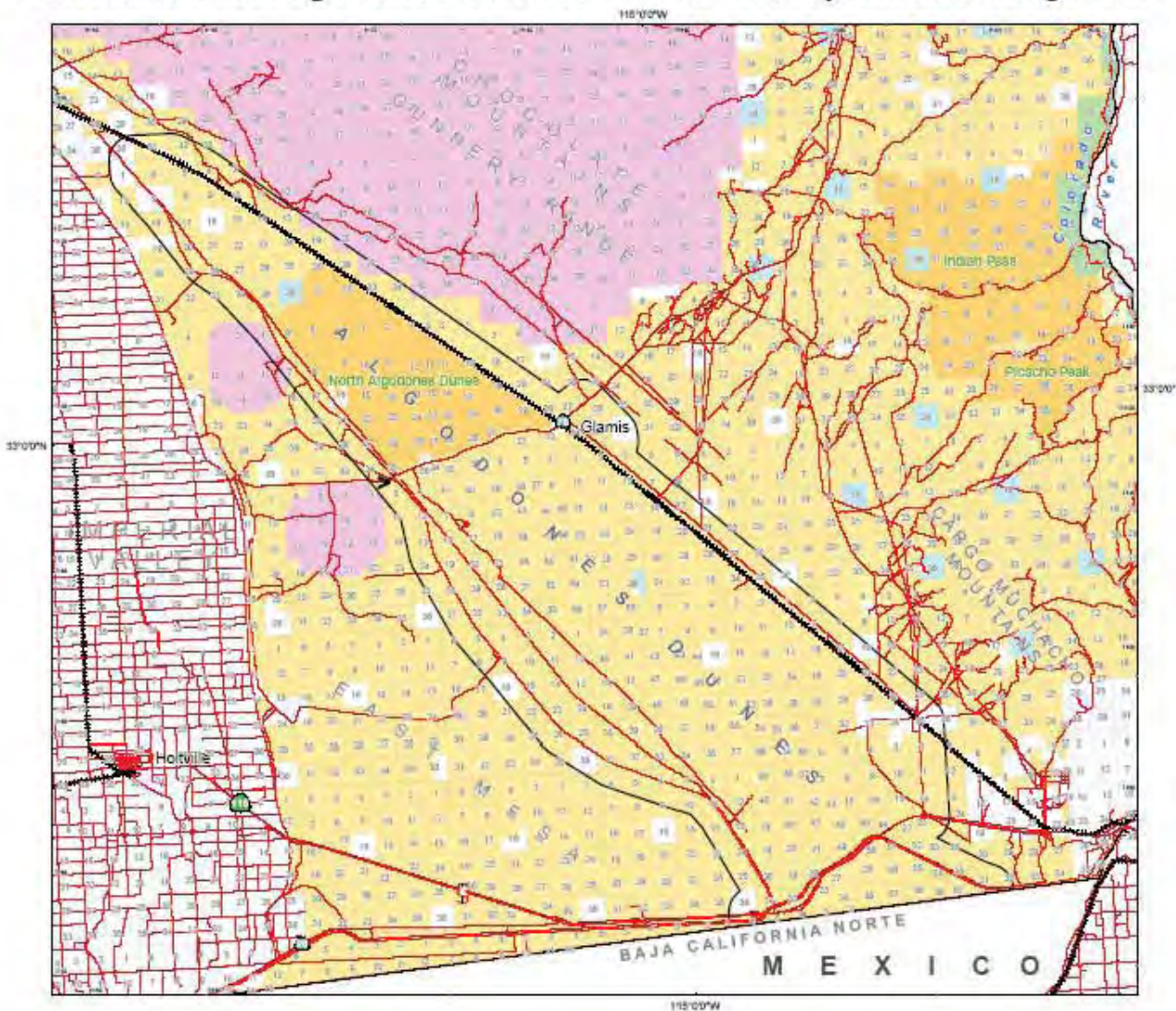
Lepismadora algodones on host plant.



Lepismadora algodones, side view.

Distribution for Algodones Sand Jewel Beetle, *Lepismadora algodones*

ABD 2017 BLM



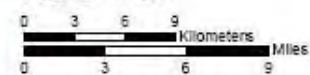
Location



Legend

- > *Lepismadora algodones*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
- BLM
- Land Ownership**
- Bureau of Land Management
- Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- State Lands
- County / City / Regional
- Unclassified

Scales 1:80,000



Map Source



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 975-4600
www.ca.blm.gov
Date Prepared: 6/5/2017
Project: 16_lepismadora_algodones_20170115.ctb

Algodones White Wax Jewel Beetle
***Prasinalia imperialis* (Barr)**
 (Coleoptera: Buprestidae)

Taxonomy

Prasinalia imperialis (Barr) 1969:326. (original generic name: *Hippomelas*). Holotype male; California: Imperial Co., 4 mi west Gordon's Well (the type series is deposited in the California Academy of Sciences).

Diagnostic features

This is the largest (19-24 mm long) buprestid found in sand dune habitats in California. The body is iridescent red-purple. However, newly emerged individuals are covered with white waxy powder.

Collection localities/distribution

CALIFORNIA: Imperial Co., Glamis, Glamis: 3.9 mi. west, 5.5-6.5 mi. west, 6.2 mi. west, 7 mi. west, 7.3 mi. west Glamis; 6.2 mi. west, 17 mi. northwest; 4 mi. west Gordon's Well; Brawley east sand dunes (=Algodones Dunes); 62 specimens were seen. This species has been collected in the months of June and July.

Natural history

Host plants. The species is associated with *Eriogonum deserticola* (Polygonaceae), and adults are found resting on the foliage, particularly in the early morning. Larvae have been found in the roots and crown of this plant species.

Habitat requirements. Sand dunes where the *Eriogonum* host plant is present. The species occurs in the Algodones Dunes.

Collecting techniques. Net-collecting.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants.

Information sources

Museum specimens in the State Arthropod Collection, California Department of Food and Agriculture, Sacramento; Entomological Research Museum, University of California, Riverside, and



Prasinalia imperialis perching.

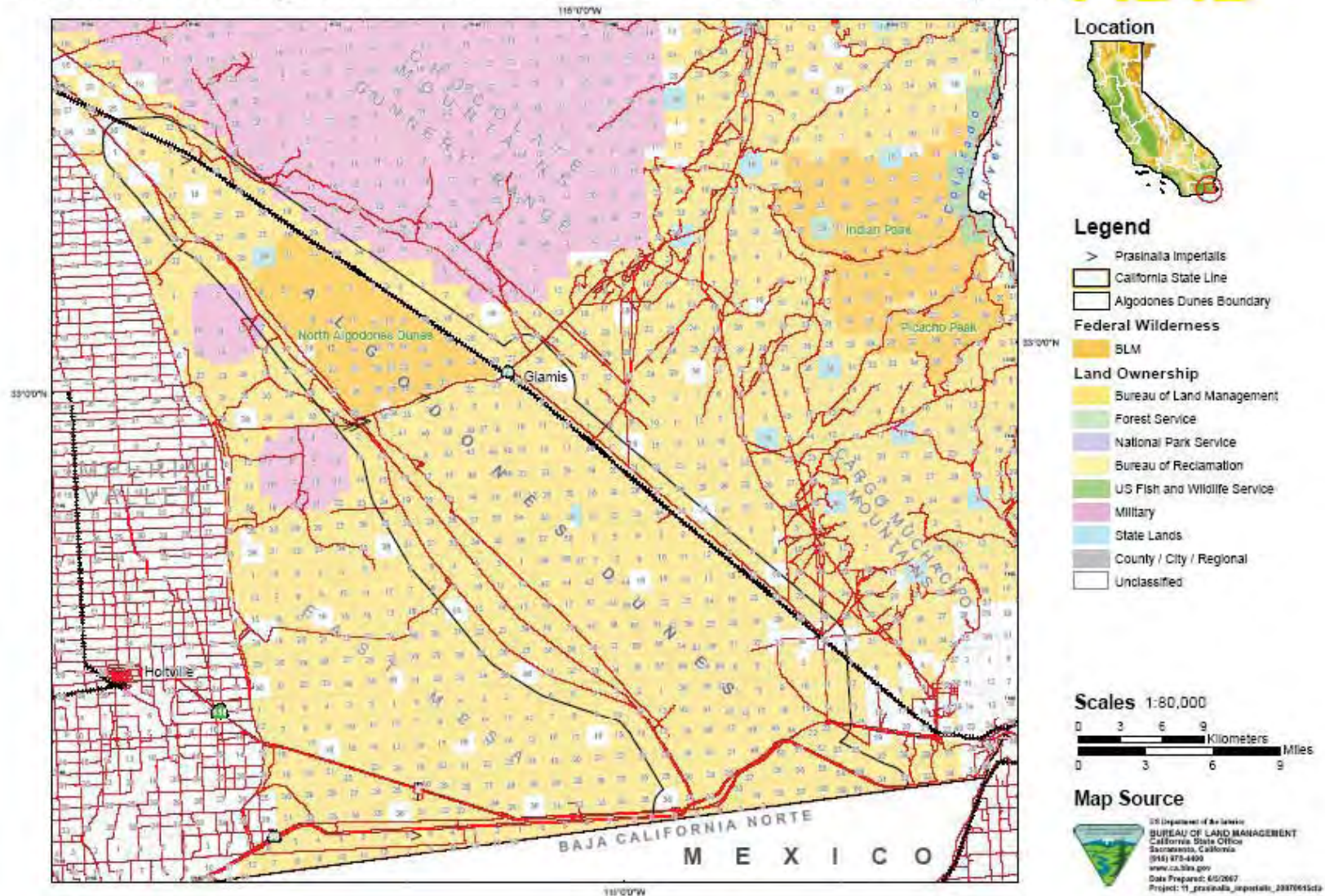


Prasinalia imperialis , side view.

Essig Museum, University of California, Berkeley. Information was also taken from Barr (1969) and Nelson and Bellamy (1996).

Distribution for Algodones White Wax Jewel Beetle, *Prasinalla imperialis*

ABDID 2007 BLM



Hareus Jewel Beetle
***Agrilus harenus* Nelson**
 (Coleoptera: Buprestidae)

Taxonomy

Agrilus harenus Nelson 1994:261. Holotype male; California: Imperial Co., 7.2 mi. west Glamis (the types are deposited in the California Academy of Sciences, San Francisco).

Diagnostic features

This species most closely resembles *Agrilus lacustris* LeConte, which is also associated with *Croton*. It can be distinguished from that species by the denser pubescence, the sublateral Pronotal carina strongly sinuate, smaller body size and uniform bronze coloration. The body length ranges from 4.5-7.0 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co., 4/7 mi. west Glamis, 7.2 mi. west Glamis on Hwy 178, 7.3 mi. west junction Hwy 78 and Coachella Canal; 16 specimens were examined. The species has been collected in the months of June, July and September.

Natural history

Host plant. Hareus Jewel Beetle adults are found on the foliage of *Croton wigginsii* Wheeler (Euphorbiaceae). This species probably also serves as the beetle's larval host plant. The larvae are stem boring, feeding in the roots and crown of the host plant. The *Croton* species is endemic to the Algodones and is also threatened.

Habitat requirements. The beetle is restricted in distribution to sites where the host plant occurs in areas of partly stabilized and active dunes. It is only found in the Algodones Dunes.

Collecting techniques. Beating sheet, net collecting.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants.

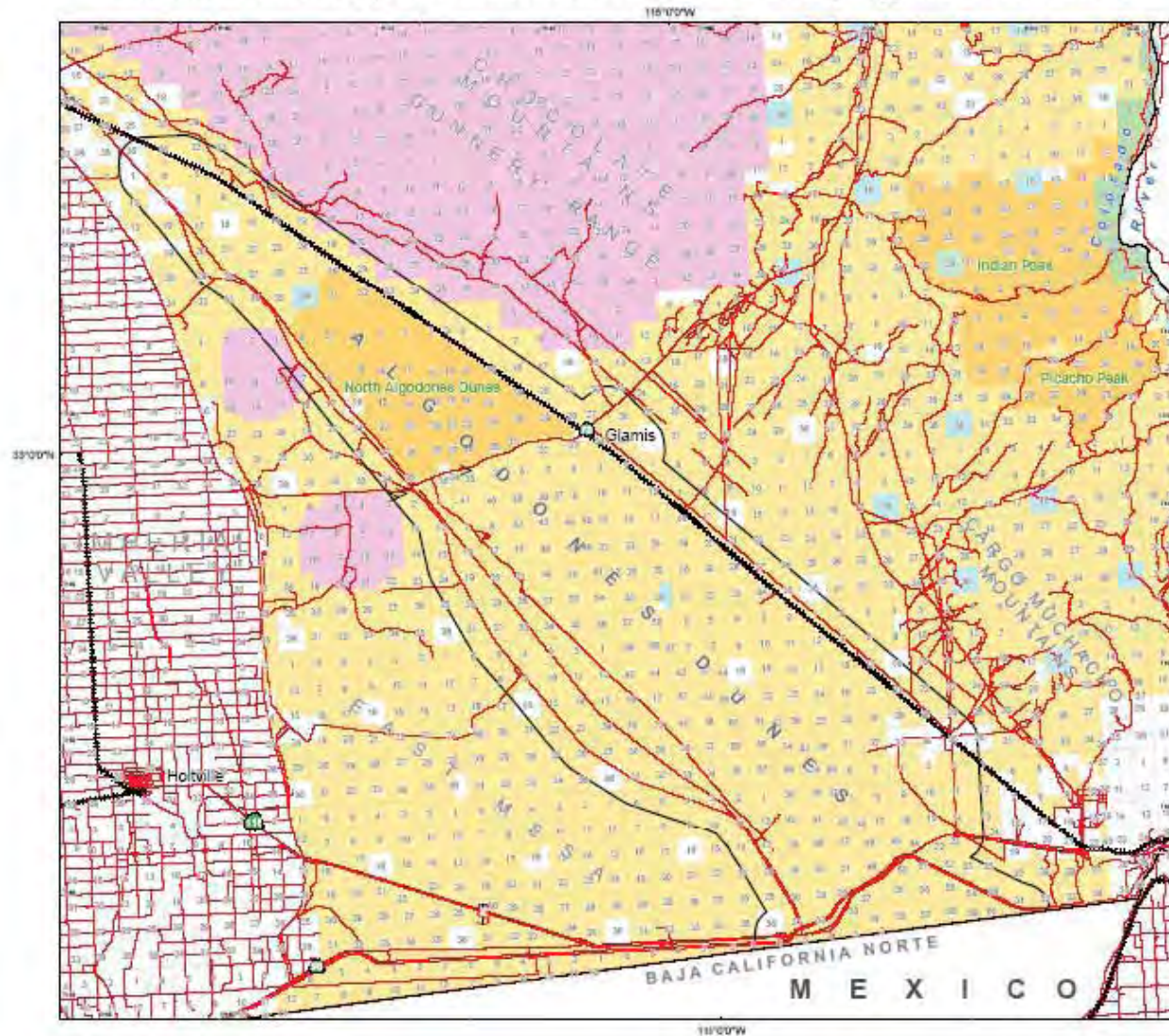
Information sources

Specimens were examined in museum collections of the Essig Museum, University of California, Berkeley; State Insect Collection, California Department of Food & Agriculture, Sacramento and Los Angeles Museum of Natural History. Information was also taken from Nelson (1994).



Agrilus harenus, side view.

Distribution Map for Harenus Jewel Beetle, *Agrilus harenus*



ABDID 2007 BLM

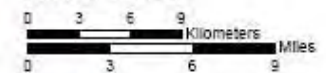
Location



Legend

- > *Agrilus harenus*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 978-4469
www.ca.blm.gov
Date Prepared: 05/2007
Project: 12_agrilus_harenus_20070915c

Algodones Dune Weevil
***Trigonoscuta rothi algodones* Pierce**
 (Coleoptera: Curculionidae)

Taxonomy

Trigonoscuta rothi algodones Pierce 1975:74. Holotype male; California: Imperial Co., Algodones Dunes (types deposited in Natural History Museum of Los Angeles).

Diagnostic features

This is a small globular weevil, which is covered with opalescent whitish scales. Adults lack wings. The body length averages 7-9 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co.: Algodones Dunes; no specimens were seen. The type series was collected in April.

Natural history

Host plants. Unknown, but other members of the genus are root feeders.

Habitat requirements. Sand dunes and open sandy soil. The subspecies is only known from the Algodones Dunes.

Collecting techniques. Pitfall trap, hand picking.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants. These flightless weevils are unable to disperse effectively.

Information sources

Information was also taken from Pierce (1975).

Imperial Dune Weevil
Trigonoscuta rothi imperialis
 (Coleoptera: Curculionidae)

Taxonomy

Trigonoscuta rothi imperialis Pierce 1975:74. Holotype female; California: Imperial Co., Algodones Dunes (types deposited in Natural History Museum of Los Angeles).

Diagnostic features

Unknown.

Collection localities/distribution

CALIFORNIA: Imperial Co.: Algodones Dunes; no specimens were seen.

Natural history

Host plants. Unknown, but other members of the genus are root feeders.

Habitat requirements. Unknown. The subspecies is only known from the Algodones Dunes.

Collecting techniques. Pitfall trap, hand picking.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants. These flightless weevils are unable to disperse effectively.

Information sources

Information was also taken from Pierce (1975).

Punctate Dune Weevil
***Trigonoscuta rothi punctata* Pierce**
 (Coleoptera: Curculionidae)

Taxonomy

Trigonoscuta rothi imperialis Pierce 1975:74. Holotype female; California: Imperial Co., Algodones Dunes (types deposited in Natural History Museum of Los Angeles).

Diagnostic features

Unknown.

Collection localities/distribution

CALIFORNIA: Imperial Co.: Algodones Dunes; no specimens were seen.

Natural history

Host plants. Unknown, but other members of the genus are root feeders.

Habitat requirements. Unknown. The subspecies is only known from the Algodones Dunes.

Collecting techniques. Pitfall trap, hand picking.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants. These flightless weevils are unable to disperse effectively.

Information sources

Information was taken from Pierce (1975).

Roth's Dune Weevil
***Trigonoscuta rothi rothi* Pierce**
 (Coleoptera: Curculionidae)

Taxonomy

Trigonoscuta rothi rothi Pierce 1975:73. Holotype male; California: Imperial Co., 13 mi w Winterhaven, Algodones Dunes (the types are deposited in the Natural History Museum of Los Angeles).

Pierce (1975) described four subspecies of *Trigonoscuta rothi* – *rothi*, *algodones*, *punctata* and *imperialis*, from the same locality in the Algodones Dunes. There is no specimen information available for any of these except the type descriptions and for the nominate subspecies, *rothi*. The genus is currently under revision by Charles W. O'Brien. According to O'Brien, one or more of these subspecies may be valid species, but it is currently impossible to tell which at this time.

Diagnostic features

Trigonoscuta rothi rothi is a small globular weevil, which is covered with opalescent whitish scales. Adults are flightless, completely lacking hindwings. The body length averages 6.5-8.5 mm.



Trigonoscuta rothi rothi, side view.



Trigonoscuta rothi rothi, top view.

Collection localities/distribution

CALIFORNIA: Imperial Co.: Glamis, 2 mi north Glamis, 2 mi. west Glamis and 5 mi. west Glamis; Gray's Well Rd.; Ogilby Rd. US Rte 8; Brock Research Center, 26.4 mi. east Calexico; 13 mi. west Winterhaven; 210 specimens were seen. The species has been collected in the months of mid January to late March.

Natural history

Host plants. Adults are foliage feeders and larvae feed on roots and buried stems. According to unpublished observations by E. R. Tinkham adults are found feeding at night on the foliage of *Eriogonum deserticola*, *Palafoxia linearis* (now *Palafoxia arida*), *Hilaria rigida* (now *Pleuraphis rigida*), *Coldenia plicata* (now *Tiquilia plicata*), *Oenothera deltoids* and *Croton californicus*. Adults are active on the surface of the sand at night and remain buried in the sand during the day.

Habitat requirements. Sand dunes and open sandy soil. The subspecies is only known from the Algodones Dunes.

Collecting techniques. Pitfall trap, hand picking, sand sifting.

Population status

Unknown.

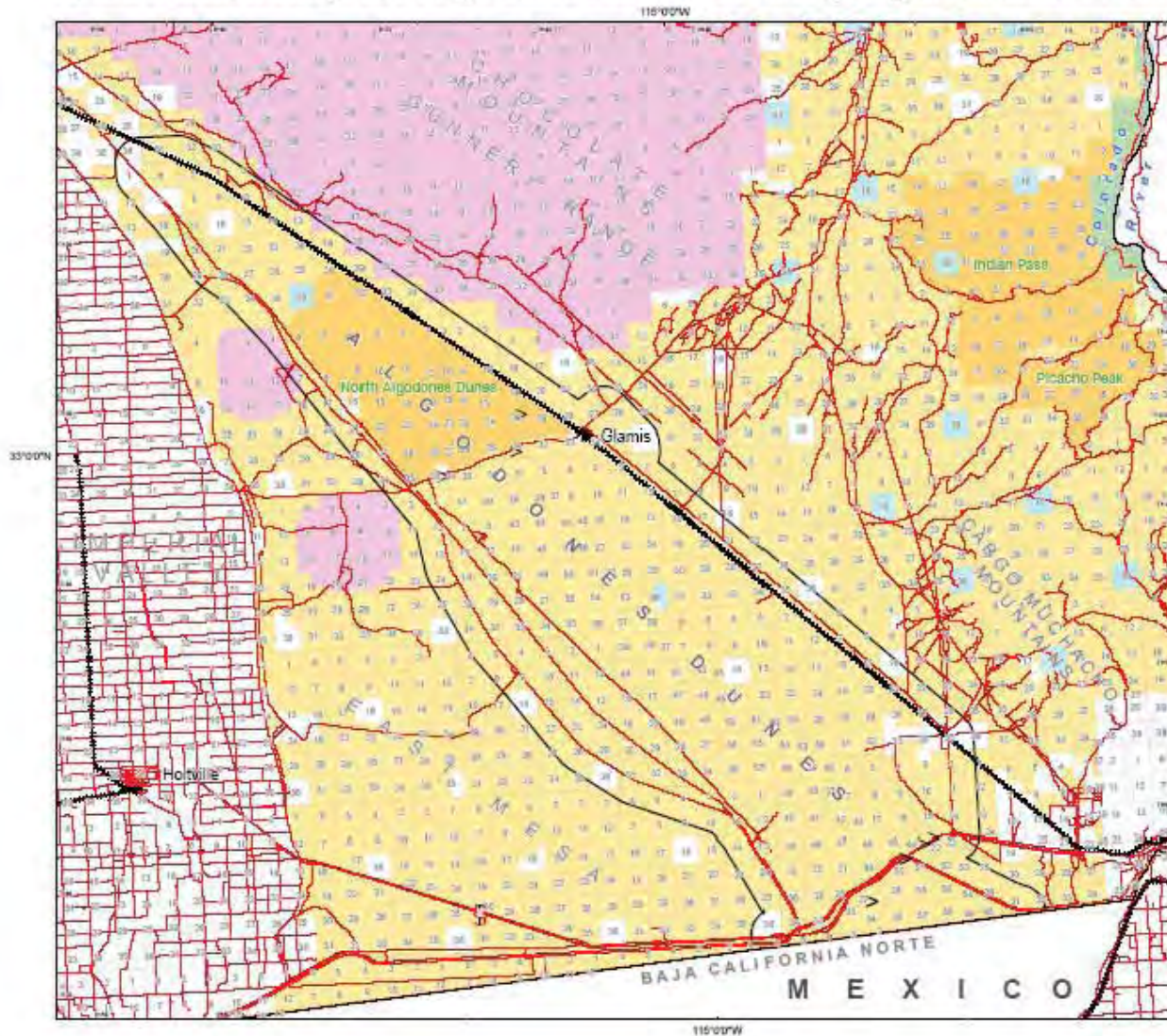
Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants. These flightless weevils are unable to disperse effectively.

Information sources

Specimens were examined in museum collections of the Bohart Museum of Entomology, University of California, Davis; Entomological Research Museum, University of California, Riverside, and State Arthropod Collection, California Department of Food and Agriculture, Sacramento. Information was also taken from Pierce (1975).

Distribution Map for Algodones Dune Weevil, *Trigonoscuta rothi*



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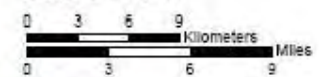
Location



Legend

- > *Trigonoscuta rothi*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 575-4800
www.ca.blm.gov
Date Prepared: 6/5/2007
Project: 12_trigonoscuta_rothi_20070915cda

Carlson's Dune Beetle
***Anomala carlsoni* Hardy**
 (Coleoptera: Scarabaeidae: Rutellinae)

Taxonomy

Anomala carlsoni Hardy 1976:365. Holotype male;
 California: Imperial Co., Glamis.

Diagnostic features

This is a small, pale brown species of scarab, ranging from 6-8 mm long.

Collection localities/distribution

CALIFORNIA: Imperial Co.: 5.5 mi. southeast Hwy 78 on Sand Hwy, 4.2 mi. southwest Cactus, Coachella Bridge, 1 mi east Coachella Bridge, 1.5 mi southwest Coachella Bridge, 2.5 mi northeast Coachella Bridge, 3.5 mi. north Coachella Bridge, 5.1 mi southeast Coachella Bridge, Glamis, 13.7 mi. northwest Glamis, 2 mi. west Glamis, 3.5 mi northwest Glamis, 5 mi south southeast Glamis, 7 mi southeast Glamis, Algodones Dunes south Ruthven; 126 specimens were examined. The species was collected in March, April and May.



Anomala carlsoni, side view.



Anomala carlsoni, top view.

Natural history

Host plants. Unknown, but other members of the genus are root feeders.

Habitat requirements. Sand dunes. The species is only known from the Algodones Dunes and vicinity (Coachella Bridge and Cactus).

Collecting techniques. Black light traps.

Population status

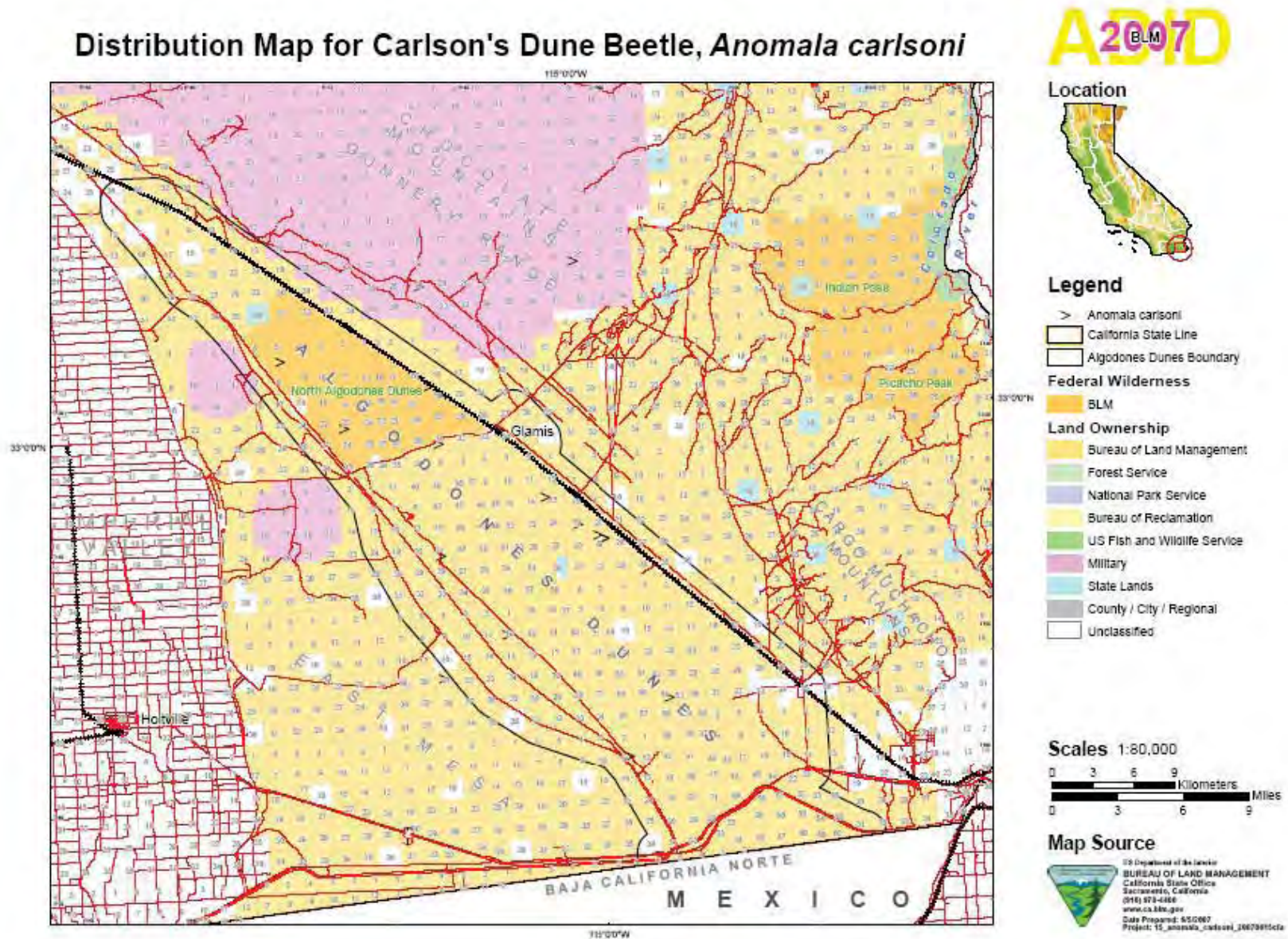
Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants.

Information sources

Specimens were examined in museum collections of the Entomological Research Museum, University of California, Riverside and State Insect Collection, California Department of Food & Agriculture, Sacramento. Information was also taken from Hardy and Andrews (1986).



Hardy's Dune Beetle
***Anomala hardyorum* Potts**
 (Coleoptera: Scarabaeidae: Rutellinae)

Taxonomy

Anomala hardyorum Potts 1976:221. Holotype male; California: Imperial Co., 3 mi. northwest Glamis (the types are deposited in the California Academy of Sciences, San Francisco).

Diagnostic features

This is a small pale brown species of scarab beetle, ranging in length from 7-10 mm. A detailed description of the genitalia, which is used to discriminate species, is in Potts (1976).

Collection localities/distribution

CALIFORNIA: Imperial Co.: 1.3 mi. west Glamis, 5.5 mi. south southeast Glamis, 7 mi. southeast Glamis, 7.4 mi southeast Glamis, 9.5 mi west Glamis, 5.1 mi. southeast Coachella Bridge; 271 specimens were examined. The species has been collected in the months of February through June.

Natural history

Host plants. Unknown, but other members of the genus are root feeders. Adults have been sifted from sand under a diversity of plant species (Hardy & Andrews 1980).

Habitat requirements. Uncompacted sand; the species is only known from the Algodones Dunes on active north and east faces (Hardy & Andrews 1980). Adults leave the sand and are active on the sand surface and flying at dusk.

Collecting techniques. Black light traps, sand sifting.

Population status

Unknown.

Sensitivity to disturbance

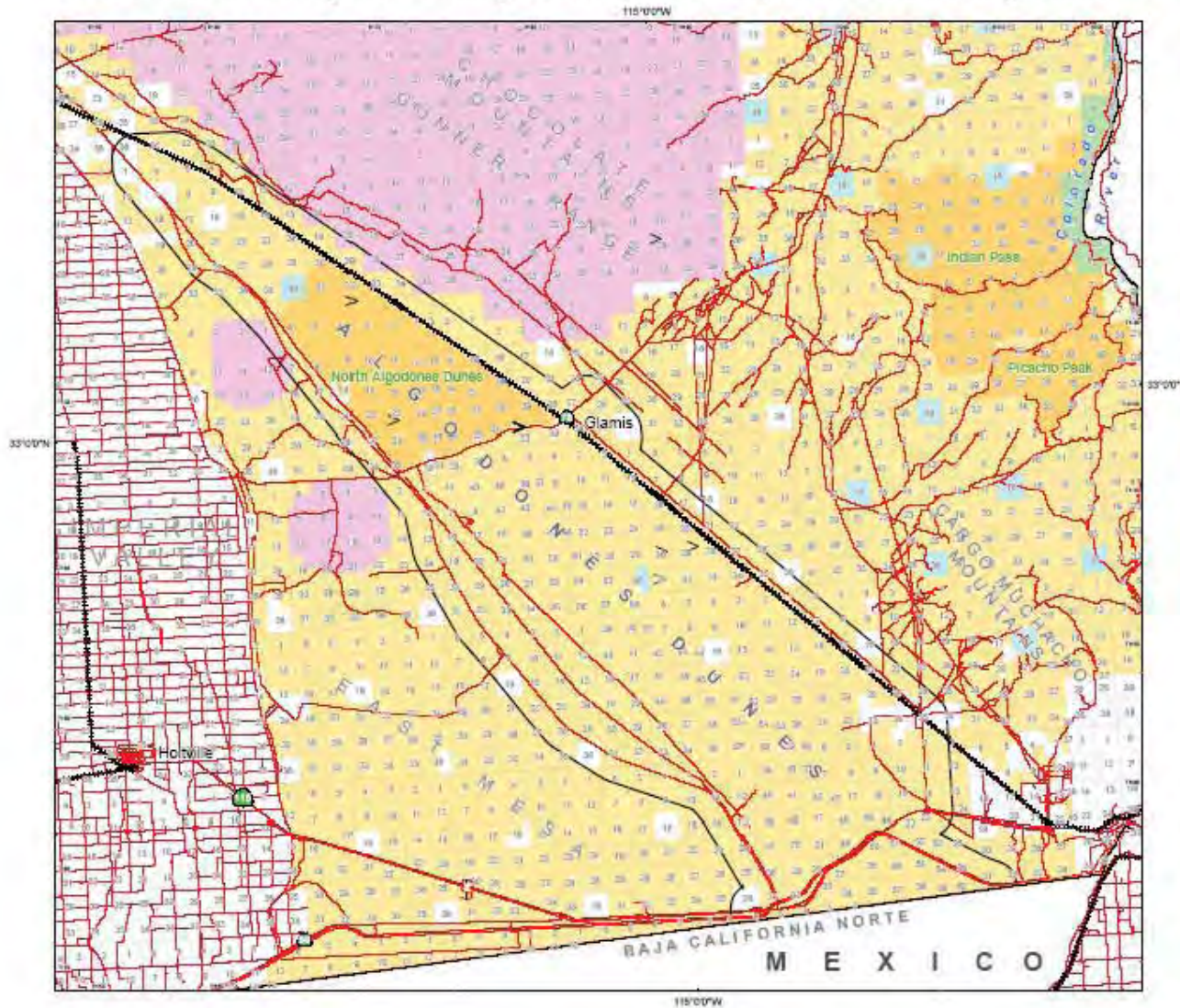
Unknown, but anything that affects the dunes they inhabit and their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants.

Information sources

Specimens were examined in museum collections of the Los Angeles Museum of Natural History and State Insect Collection, California Department of Food & Agriculture, Sacramento. Information was also taken from Hardy and Andrews (1980) and Potts (1976).



Distribution Map for Hardy's Dune Beetle, *Anomala hardyorum*



A2007BLM

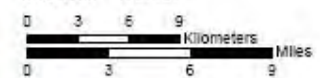
Location



Legend

- > *Anomala hardyorum*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
- BLM
- Land Ownership**
- Bureau of Land Management
- Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- State Lands
- County / City / Regional
- Unclassified

Scales 1:80,000



Map Source



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
95834-6400
www.blm.gov
Date Prepared: 6/5/2007
Project: 16, *Anomala hardyorum*, 2007BLM161616.mxd

Wandae Dune Beetle
***Cyclocephala wandae* Hardy**
 (Coleoptera: Scarabaeidae: Dynastinae)

Taxonomy:

Cyclocephala wandae Hardy 1974:160. Holotype male; California: Imperial Co., 3 mi northwest Glamis (type deposited in US National Museum).

Superficially *wandae* resembles *Leptohoplia testaceipennis* Saylor and *Cyclocephala arenosa* Howden & Endrödi.

Diagnostic features:

This is a small, brown species of scarab. It averages 7-8 mm in length and is one of the smaller species in the Dynastinae in North America. It can be distinguished by the male genitalia.

Collection localities/distribution:

CALIFORNIA: Imperial Co., 1.3 mi. west Glamis on Hwy 78, 5 mi. southwest Glamis; six specimens were seen. The species has been collected in the months of July through August.

Natural history:

Host plants. Unknown, but other members of the genus are root feeders.

Habitat requirements. Sandy soil/dunes. This species is only known from the Algodones Dunes.

Collecting techniques. Black light trap, pitfall

Population status:

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants.

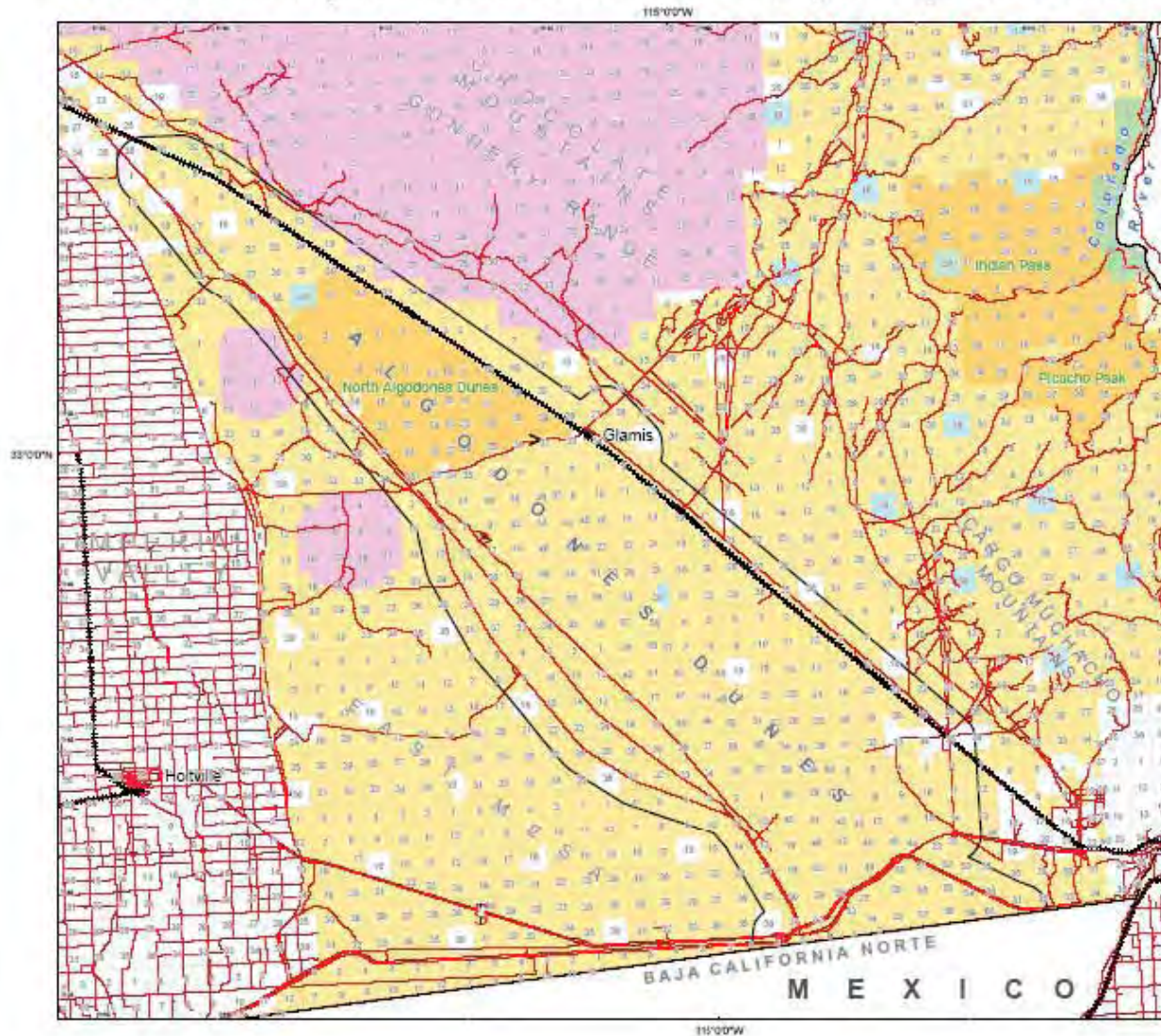
Information sources:

Specimens were examined in museum collections of the Essig Museum, University of California, Berkeley, and Los Angeles Museum of Natural History, and State Insect Collection, California Department of Food & Agriculture, Sacramento. Information was also taken from Hardy (1974).



Cyclocephala wandae, top view.

Distribution Map for Wandae Dune Beetle, *Cyclocephala wandae*



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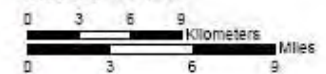
Location



Legend

- > *Cyclocephala wandae*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 422-4888
www.blm.gov
Date Prepared: 6/5/2007
Project: 17_cyclocephala_wandae_20070115a.mxd

Andrew's Dune Scarab Beetle
***Pseudocotalpa andrewsi* Hardy**
 (Coleoptera: Scarabaeidae: Rutellinae)

Taxonomy

Pseudocotalpa andrewsi Hardy 1971:239. Holotype male; California: Imperial Co., Glamis (types deposited in the California Academy of Sciences, San Francisco).

Diagnostic features

Body length 13-18 mm. This is a distinctive beetle with a pale yellowish brown body and dense white hair on the venter.

Collection localities/distribution

CALIFORNIA: Imperial Co.: Algodones dunes south Ruthven, Glamis, 0.6 mi. west Glamis, 1.3 road mi. west Glamis on Hwy 78, 1.5 mi. west Glamis, 11 mi south southeast Glamis, 13.7 mi. northwest Glamis, 2 mi. west Glamis, 3 mi. northwest Glamis, 2.7 mi. northwest Glamis, 5 km north Glamis, 7 mi. southeast Glamis, Algodones Dunes south Ruthven, 9.5 mi. northwest Glamis, 5 mi. south Ogilby; San Diego Co.: 5 mi. east of Borrego Springs; ARIZONA: Yuma Co., Yuma Dunes. The species is found in the months of February to May.



Pseudocotalpa andrewsi, side view.



Pseudocotalpa andrewsi, top view.

Natural history

Host plants. Unknown, but other members of the genus are root feeders.

Habitat requirements. Sand dunes. According to Hardy (1971) these beetles live deep in sand, only emerging at late twilight to fly to find mates. They are much less frequently collected at black light than by hand collecting during this period.

Collecting techniques. Hand collecting at twilight, black light trapping in early evening.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their host plants could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host plants affected and the severity of the impact to the individual plants.

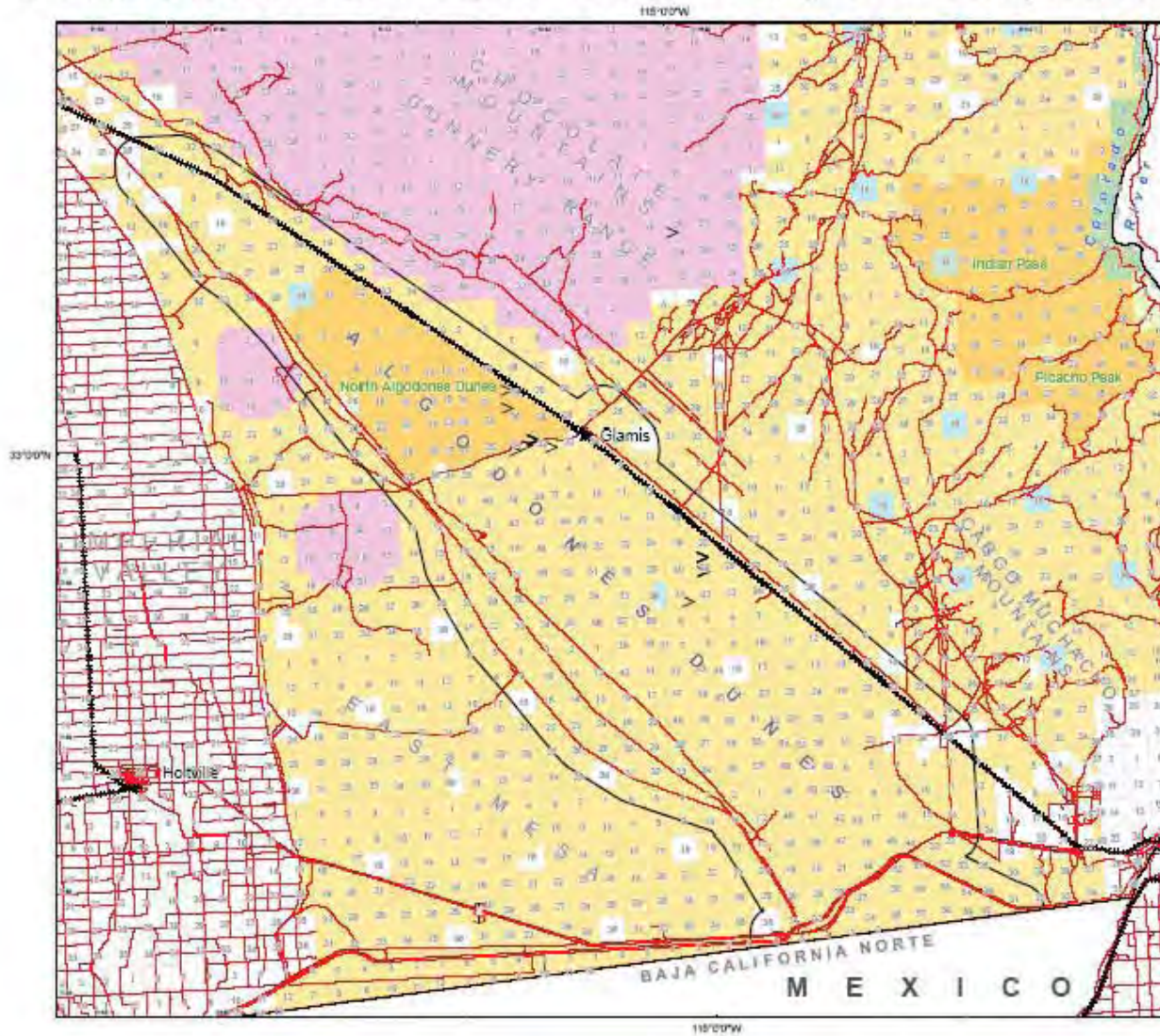
Information sources

Information is from Hardy (1971), Hardy and Andrews (1986) and Rust (1985), and specimens from the Bohart Museum of Entomology, UC Davis; State Collection of Arthropods, California Dept. of Food & Agriculture; Essig Museum, University of California, Berkeley; Natural History Museum of

Los Angeles; State Arthropod Collection, California Department of Food and Agriculture, and Entomological Research Museum, University of California, Riverside.

Distribution for Andrew's Dune Scarab Beetle, *Pseudocotalpa andrewsi*

ABDID 2007 BLM



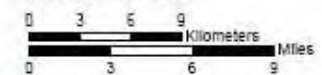
Location



Legend

- > *Pseudocotalpa andrewsi*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
- BLM
- Land Ownership**
- Bureau of Land Management
- Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- State Lands
- County / City / Regional
- Unclassified

Scales 1:80,000



Map Source



Section 2. Additional Species Endemic to the Dunes

Glamis Sandfly
***Apiocera warneri* Cazier**
 (Diptera: Apioceridae)

Taxonomy

Apiocera warneri Cazier 1985:17. Holotype male; California: Imperial Co., 1.5 mi w Glamis (types deposited in the American Museum of Natural History).

Diagnostic features

The pale, almost unmarked body coloration is diagnostic for this species, separating it from the closely related species, *A. sonora* Cazier and *A. bilineata* Painter.

Collection localities/distribution

CALIFORNIA: Imperial Co.: 1.5 mi w Glamis, 4 mi n Glamis; 5 specimens have been described. The species was collected in September.

Natural history

Nectar sources. Unknown.

Habitat requirements. Larval stages are predatory, living in sand dunes/loose sandy soil. The species is only known from the Algodones Dunes.

Collecting techniques. Hand netting and black light trap.

Population status

Unknown.

Sensitivity to disturbance

Unknown.

Information sources

No specimens were seen. Information was taken from the original publication, Cazier (1985).

Glamis Robberfly
***Efferia macroxipha* Forbes**
 (Diptera: Asilidae)

Taxonomy

Efferia macroxipha Forbes 1988:556. Holotype male; California: Imperial Co., Rt. 78 2 mi west Glamis (deposited in the California Academy of Sciences).

Diagnostic features

This is a large robberfly, almost entirely covered with whitish pilosity. Body length ranges from 19-26 mm. This species also has the longest ovipositor of any nearctic asilid.

Collection localities/distribution

CALIFORNIA: Imperial Co.: 2 mi west Glamis, Glamis off Hwy 78, Gecko Campground near Rt. 78, 3 mi south Route 78; 21 specimens were seen. The species was collected in the month of September.

Natural history

Prey species. Sphecids wasps, noctuid moths and ant lions have been recorded as prey. This predatory fly undoubtedly feeds on a diversity of flying insects that are smaller than it is.

Habitat requirements. Sand dunes. The species was found perching on *Ephedra* and *Eriogonum* twigs just above the soil surface and not directly on the sand, and was collected between 1200 and 1800 hours.

Collecting techniques. Net collecting and malaise trapping.

Population status

Unknown.

Sensitivity to disturbance

Unknown.

Information sources

Specimens were examined in the collections of the California Academy of Sciences, San Francisco. Additional information is from Forbes (1988).

Perdita
Perdita flavicincta
 (Hymenoptera: Andrenidae)

Taxonomy

This species is undescribed, but has been assigned the name *flavicincta* in on-line lists. The species name *flavicincta* has never been published and is therefore a *nomen nudum*, and should not be used.

Diagnostic features

Unknown.

Collection localities/distribution

Reported to be from the Algodones Dunes.

Natural history

Nest sites. Unknown. However, all *Perdita* species nest in the ground.

Nectar plants. Unknown, but *Perdita* species are host plant specific.

Habitat requirements. Unknown

Collecting techniques. Net collecting, yellow bowls and malaise trapping.

Population status

Unknown.

Sensitivity to disturbance

Unknown, but anything that affects their nectar and pollen plants or nest sites could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of nectar and pollen plants affected and the severity of the impact to the individual plants.

Information sources

This species name has been listed in a number of websites about the Algodones Dunes, including Wikipedia.org and Answers.com.

Perdita
***Perdita frontalis* Timberlake**
 (Hymenoptera: Andrenidae)

Taxonomy

Perdita frontalis Timberlake 1968:12. Holotype female; California: Imperial Co., 5.7 mi west Glamis (types deposited in the California Academy of Sciences, San Francisco, on permanent loan from the University of California, Riverside).

Diagnostic features

The species most closely resembles *Perdita (Heteroperdita) arenaria* but can be distinguished by the large yellow spot on the side of the frons and the inner eye margin is yellow up to the top of the eye. The body length is 3-4 mm.

Collection localities/distribution

CALIFORNIA: Imperial Co., dunes west Glamis, 5.7 mi. west Glamis; 3 females are recorded. The species was collected in July.

Natural history

Nest sites. Unknown. However, all *Perdita* species nest in the ground.

Nectar plants. *Eriogonum deserticola* and *Coldenia plicata*. *Perdita* species are host plant specific.

Habitat requirements. The species is only known from the Algodones Dunes from the type series.

Collecting techniques. Hand net, malaise trap.

Population status

Unknown.

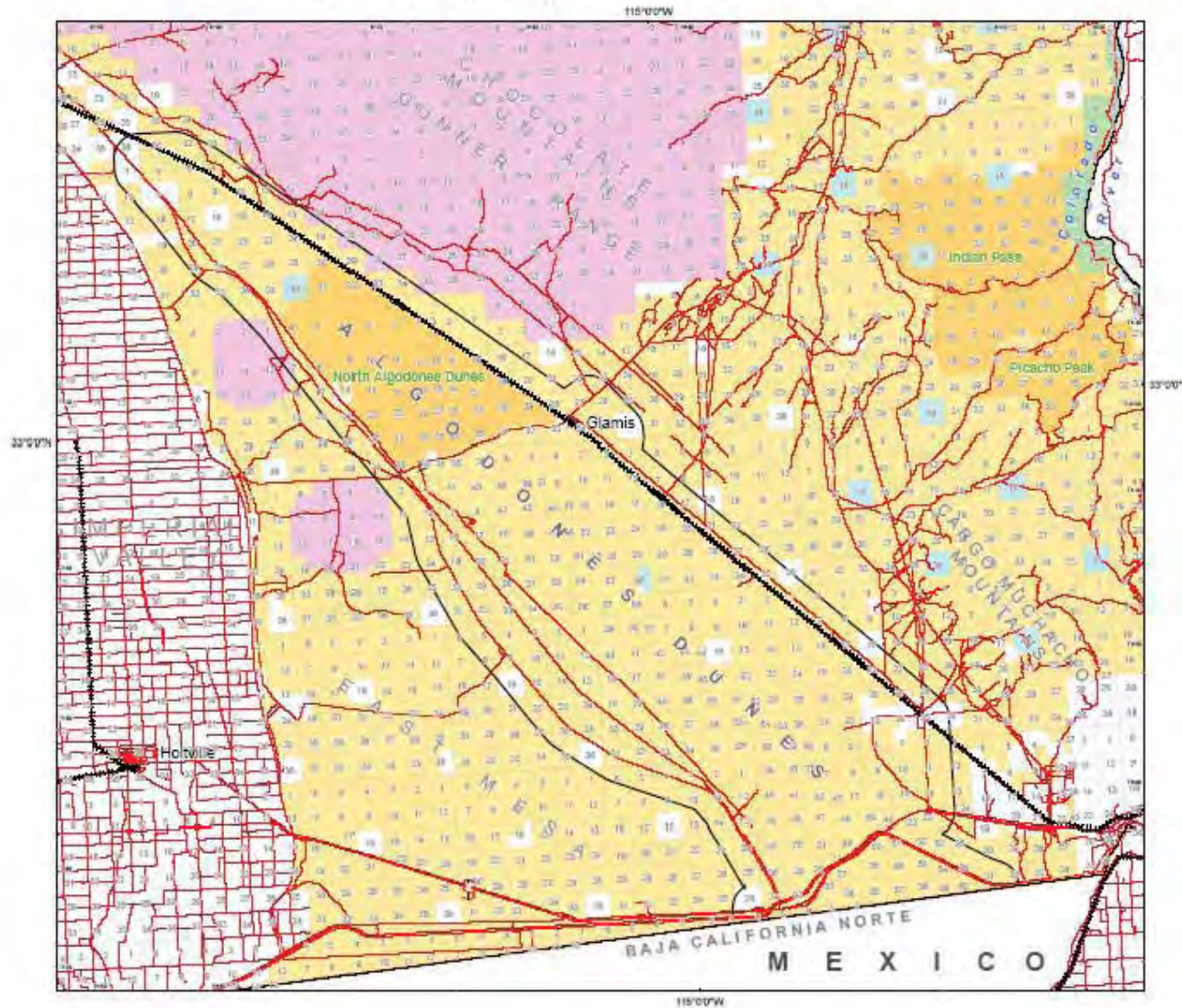
Sensitivity to disturbance

Unknown, but anything that affects their nectar and pollen plants or nest sites could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of nectar and pollen plants affected and the severity of the impact to the individual plants.

Information sources

No specimens have been seen; information is from Timberlake (1968).

Distribution Map for *Perdita frontalis*



A2007BLM

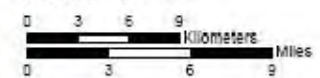
Location



Legend

- > *Perdita frontalis*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
- BLM
- Land Ownership**
- Bureau of Land Management
- Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- State Lands
- County / City / Regional
- Unclassified

Scales 1:80,000



Map Source

100 Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
95819-8700
www.blm.gov
Data Prepared: 05/2007
Project: 15_perdita_frontalis_2007051501a.mxd

Glamis Night Mutillid
***Sphaerophthalma ecarinata* Schuster**
 (Hymenoptera: Mutillidae)

Taxonomy

Sphaerophthalma ecarinata Schuster 1958:20.
 Holotype male; California (type deposited in the US National Museum).

Diagnostic features

These are moderate-sized nocturnal wasps, ranging from 15-20 mm long. Schuster comments on the unusually large ocelli and eyes and the mandible with a small subapical tooth. Males are winged, females are wingless.

Collection localities/distribution

CALIFORNIA, Imperial Co. 5 mi southwest Glamis; 5 mi southwest Glamis; 6 mi southwest Glamis; 20 mi. east Brawley sand dunes; 3 mi. north Glamis; 78 specimens were examined. The species has been collected in April, July and September. These wasps have only been collected from the Algodones Dunes.



Sphaerophthalma ecarinata, male side view.

Natural history

Biology. Unknown. These are undoubtedly parasitoids on other insects, particularly bees and wasps.

Habitat requirements. Open sandy soil/dunes.

Collecting techniques. Black light trap (male), pitfall trap (female).

Population status

Unknown.

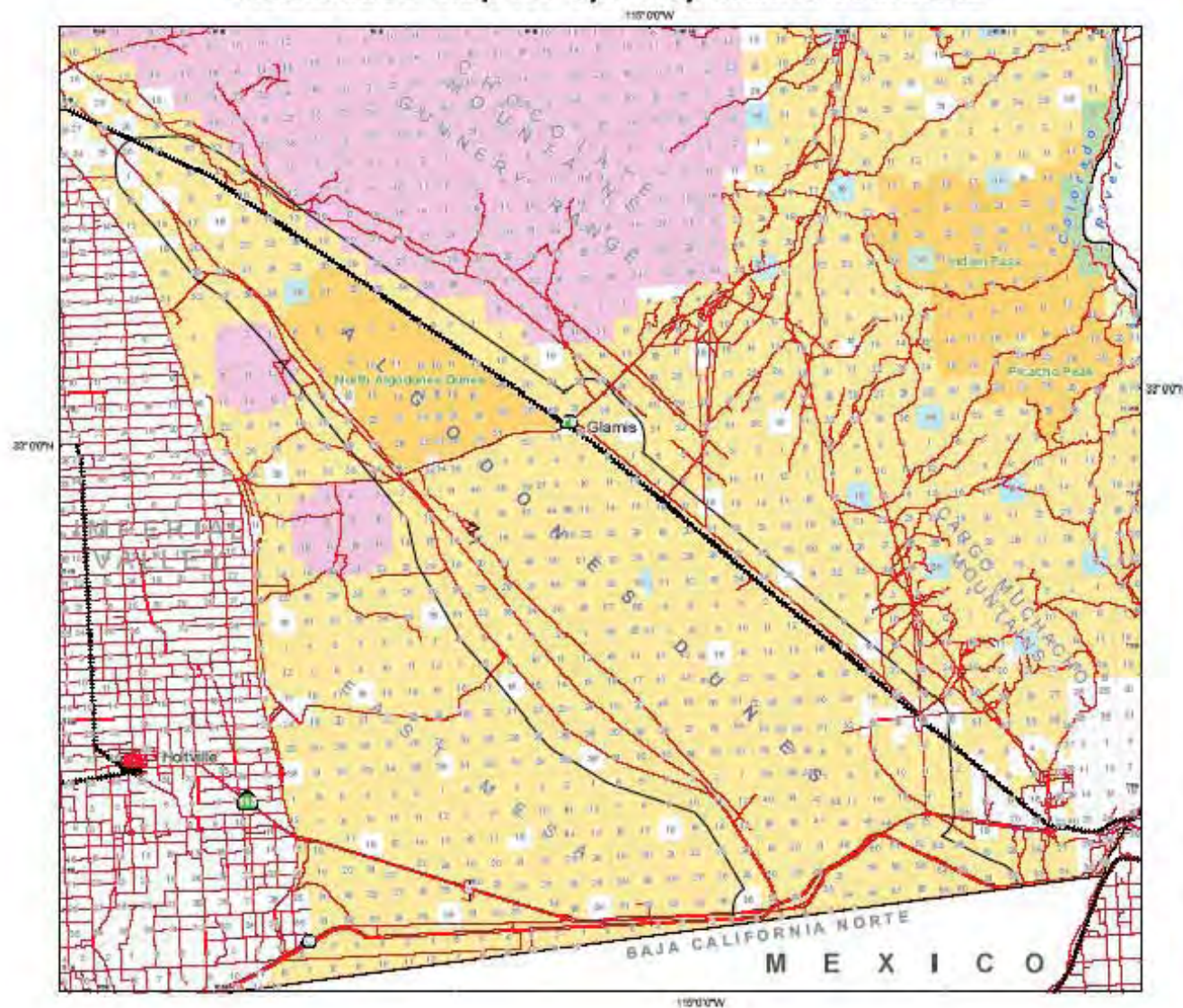
Sensitivity to disturbance

Unknown, but anything that affects their host insects could seriously impact the species. How significant any such habitat disturbance would be to this species would depend on the number of host insects affected and the severity of the impact to the individual host insects.

Information sources

Museum specimens in the collections of Utah State University, Logan and State Insect Collection, California Department of Food & Agriculture, Sacramento. Information was also taken from Schuster (1958).

Distribution Map for *Sphaerophthalma ecarinata*



ABID
BLM 2007

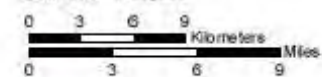
Location



Legend

- > *Sphaerophthalma ecarinata*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
- BLM
- Land Ownership**
- Bureau of Land Management
- Forest Service
- National Park Service
- Bureau of Reclamation
- US Fish and Wildlife Service
- Military
- State Lands
- County / City / Regional
- Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
Bureau of Land Management
California State Office
Sacramento, California
1995
Data Prepared: 7/20/07
Project: 2007-2008 BLM California State Office

Glamis Night Tiphid
***Sedomaya glamisensis* Kimsey & Wasbauer**
 (Hymenoptera: Tiphidae)

Taxonomy

Sedomaya glamisensis Kimsey & Wasbauer
 1998:72. Holotype male; California, Imperial Co.,
 Glamis (type series in the University of California,
 Davis).

Sedomaya belongs to the tiphid subfamily
 Brachycistidinae. This is monotypic genus is
 known only from the Algodones Dunes.

Diagnostic features

The genus and species are characterized by the
 small size, 5-7 mm long, the presence of a
 stridulatory structure on the forecoxa, the first
 metasomal sternum with a short, longitudinal
 carina extending posteromedially from the base, a ventral clypeal bevel, elongate digitus, and reduced
 wing venation with only two small submarginal and one discoidal cell in the forewing.



Sedomaya glamisensis male, side view.

Collection localities/distribution

CALIFORNIA: Imperial Co., Glamis, 3 mi. north Glamis; 29 specimens were studied. The species
 has been collected in the months of April and September.

Natural history

Host species. Unknown. Tiphids are all parasitoids but the hosts are unknown for the entire
 subfamily.

Nectar plants. None.

Habitat requirements. Open sandy soil/dunes; endemic to the Algodones Dunes.

Collecting techniques. Members of this subfamily are mostly collected at UV (blacklight) lights at
 night. Females are unknown for the genus, but females in related genera have been collected in pitfall
 traps.

Population status

Unknown.

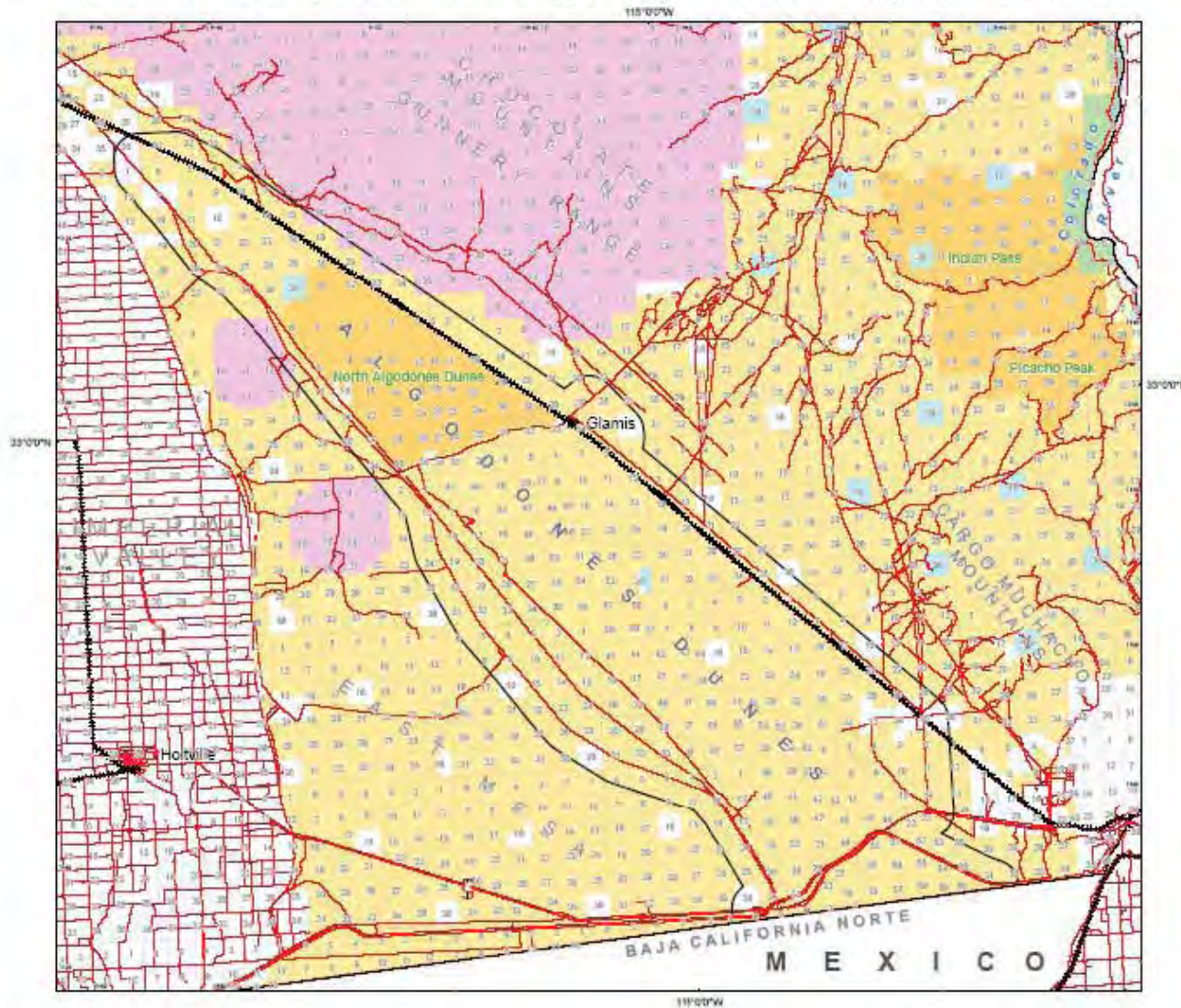
Sensitivity to disturbance

Unknown, but anything that affects their host insects could seriously impact the species. How
 significant any such habitat disturbance would be to this species would depend on the number of
 host insects affected and the severity of the impact to the individual host insects.

Information sources

Museum specimens in the Bohart Museum of Entomology, University of California, Davis, and
 information from Kimsey and Wasbauer (1999).

Distribution Map for Glamis Night Tiphid, *Sedomaya glamisensis*



A2007BLM

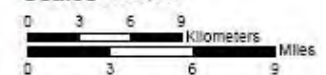
Location



Legend

- > *Sedomaya glamisensis*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 978-4444
www.blm.gov
Data Prepared: 6/2/04
Project: 26_sedomaya_glamisensis_20070101.ctb

Section 3. Insects Appearing on Various Lists but Not Endemic to the Dunes

Hairy Night Mutillid
***Odontophotopsis villosa* Mickel**
 (Hymenoptera: Mutillidae)

Taxonomy

Odontophotopsis villosa Mickel 1983 (in Mickel and Clausen 1983):550. Holotype male; California: Riverside Co., Palm Springs (types deposited in the University of Minnesota).

Diagnostic features

Males are winged, female are unknown but should be wingless as is typical for the genus.

O. villosa resembles *unicornis* Schuster and *erebus* (Melander) but can be distinguished by

having the mandibles only weakly excised ventrally, the clypeus weakly tuberculate, shorter marginal cell, and the presence of an elevated carina on metasomal sternum II.



Odontophotopsis villosa male, side view.

Collection localities/distribution

CALIFORNIA: Imperial Co., 5 mi southwest Glamis, Algodones Dunes south Ruthven, 3 mi. north Glamis, 7 mi southeast Glamis, Holtville; Riverside Co.: Palm Springs, Thousand Palms; 38 specimens were examined. The species is collected in the months of April, July and September. It is found in Riverside and Imperial Counties.

Natural history

Biology. Unknown. Members of this family are all parasitoids on other insects, particularly bees and sphecids wasps.

Habitat requirements. Sand dunes.

Collecting techniques. Black light trap (males), pitfall traps (females).

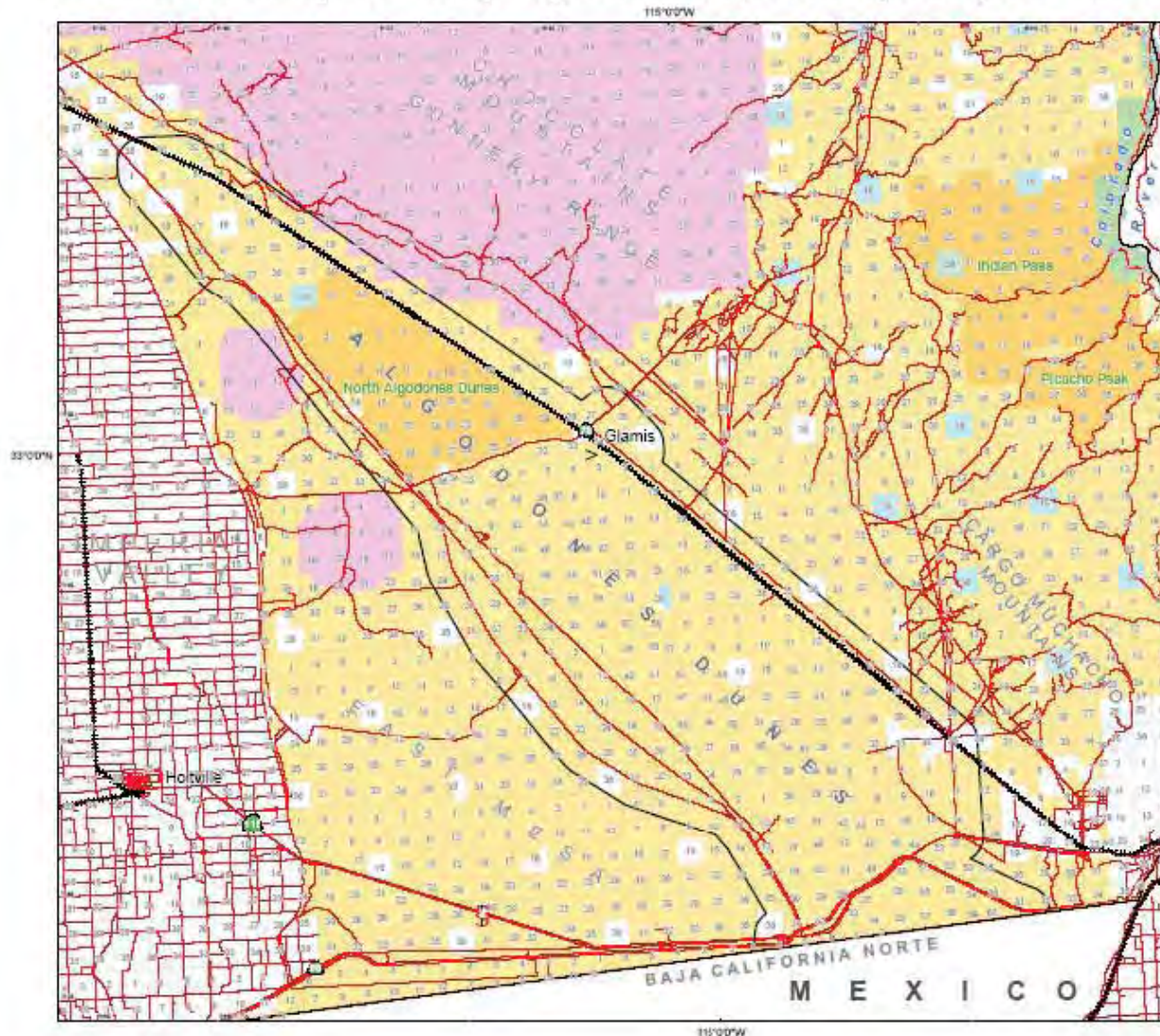
Population status

Unknown.

Information sources

Museum specimens from Utah State University, Logan, and the State Insect Collection, California Department of Food & Agriculture, Sacramento. Information was also taken from Mickel and Clausen (1983).

Distribution Map for Hairy Night Mutillid, *Odontophotopsis villosa*



2007 BLM ADID

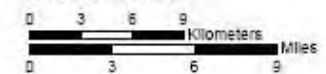
Location



Legend

- Odontophotopsis villosa*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source

US Department of the Interior
BUREAU OF LAND MANAGEMENT
California State Office
Sacramento, California
(916) 575-6000
www.blm.gov
Data Prepared: 6/2007
Project: ST_Odontophotopsis_villosa_20070502a.mxd

Sleeper's Rhinoceros Beetle
***Megasoma sleeperi* Hardy**
 (Coleoptera: Scarabaeidae: Dynastinae)

Taxonomy

Megasoma sleeperi Hardy 1972:775. Holotype female; California; Riverside Co. Joshua Tree National Monument, Pleasant Valley (types deposited in US National Museum).

Diagnostic features

This is one of the smallest species of *Megasoma*. It is similar in size to *Pseudocatalpa* species but is much darker in color. Individuals range from 25-30 mm long.

Collection localities/distribution

California: Riverside Co.: Joshua Tree National Monument, Pleasant Valley; Imperial Co.: Glamis, 2 mi north, 1.3 mi. southwest, 3 mi. northwest, 7 mi. southeast; Riverside Co.: Deep Canyon; seven specimens were examined. The species has been collected in the months of September and October.

This species is found as far north as Deep Canyon and Joshua Tree National Monument in Riverside County. It is not endemic to the Algodones Dunes.



Megasoma sleeperi female, side view.



Megasoma sleeperi female, top view.

Natural history

Host plants. *Megasoma sleeperi* is associated with Palo Verde, *Cercidium macrophyllum*. Adults can be found feeding on sap and honeydew on the trees or by black light trapping in the vicinity. Larvae feed in dead Palo Verde wood.

Habitat requirements. Habitats with Palo Verde trees.

Collecting techniques. Hand picking off palo verde, black light trap.

Population status

Unknown.

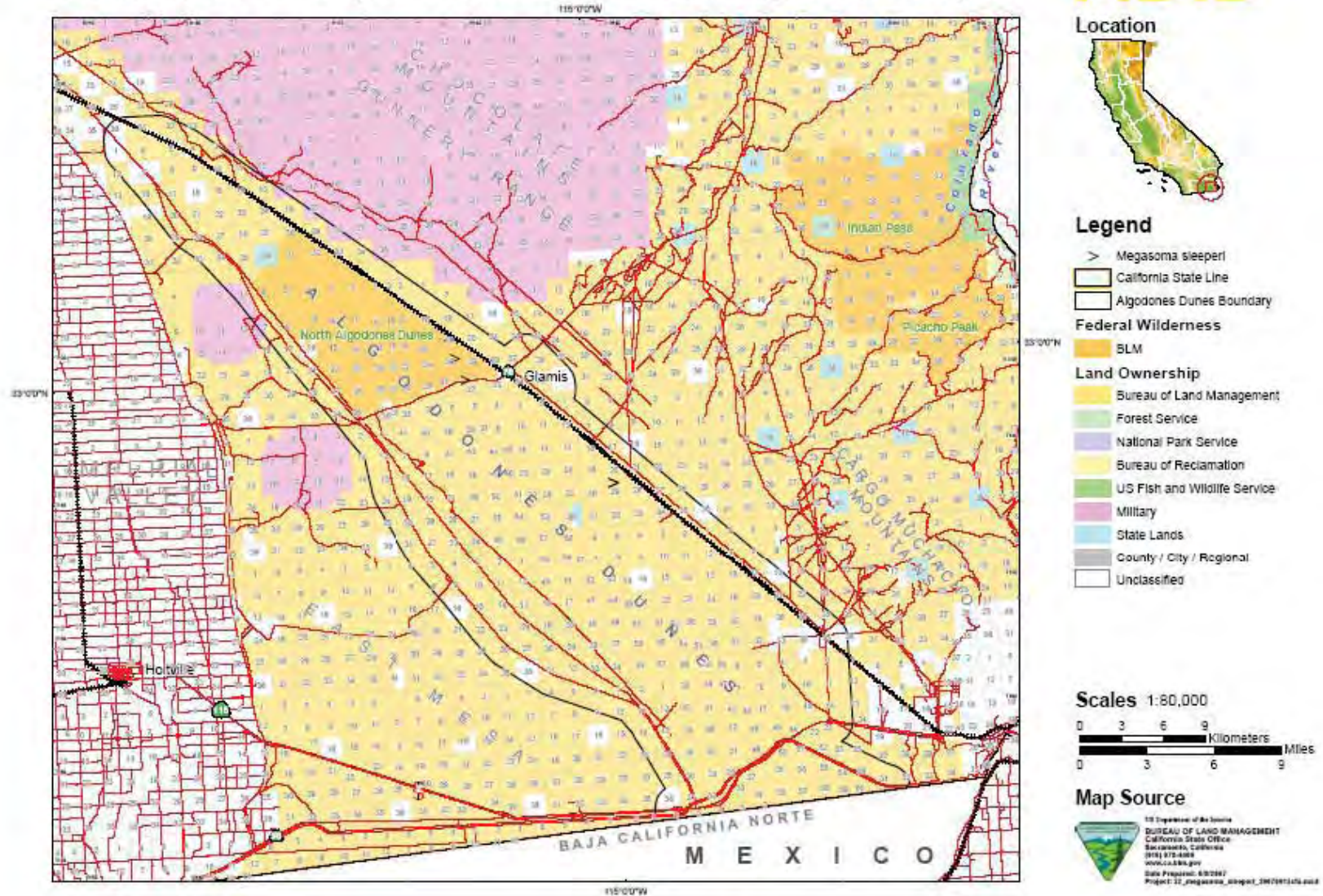
Sensitivity to disturbance

Unknown.

Information sources

Hardy (1972), Hardy and Andrews (1974) and Van Dam et al. (2006), and museum specimens from the University of California, Riverside; State Insect Collection, California Department of Food & Agriculture, Sacramento and Essig Museum, University of California, Berkeley.

ABID 2007



Sonora Dune Scarab Beetle
***Pseudocotalpa sonora* Hardy**
 (Coleoptera: Scarabaeidae: Rutelinae)

Taxonomy

Pseudocotalpa sonora Hardy 1974:246. Holotype male; Mexico: Sonora, 50 mi. North Puerto Penasco (type deposited in the California Academy of Sciences).

Diagnostic features

Body length 21 mm. This species resembles *Pseudocotalpa andrewsi* but lacks the long dense, whitish setae on the venter seen in that species.

Collection localities/distribution

USA: CALIFORNIA: Imperial Co., Algodones dunes, Hwy 78 north Osborne overlook, 1.5 mi. west Glamis, 3.9 mi. west Glamis, Yuma Sand Hills (below Yuma); MEXICO: SONORA: 50 mi southwest Sonoita; 7 specimens were examined. The species has been collected in the month of April.

Natural history

Host plant. Unknown.

Habitat requirements. Sand dunes. The species occurs in the Algodones Dunes east to Yuma and probably south to the Gulf of California.

Collecting technique. Black light trap.

Population status

Unknown.

Sensitivity to disturbance

Unknown.

Information sources

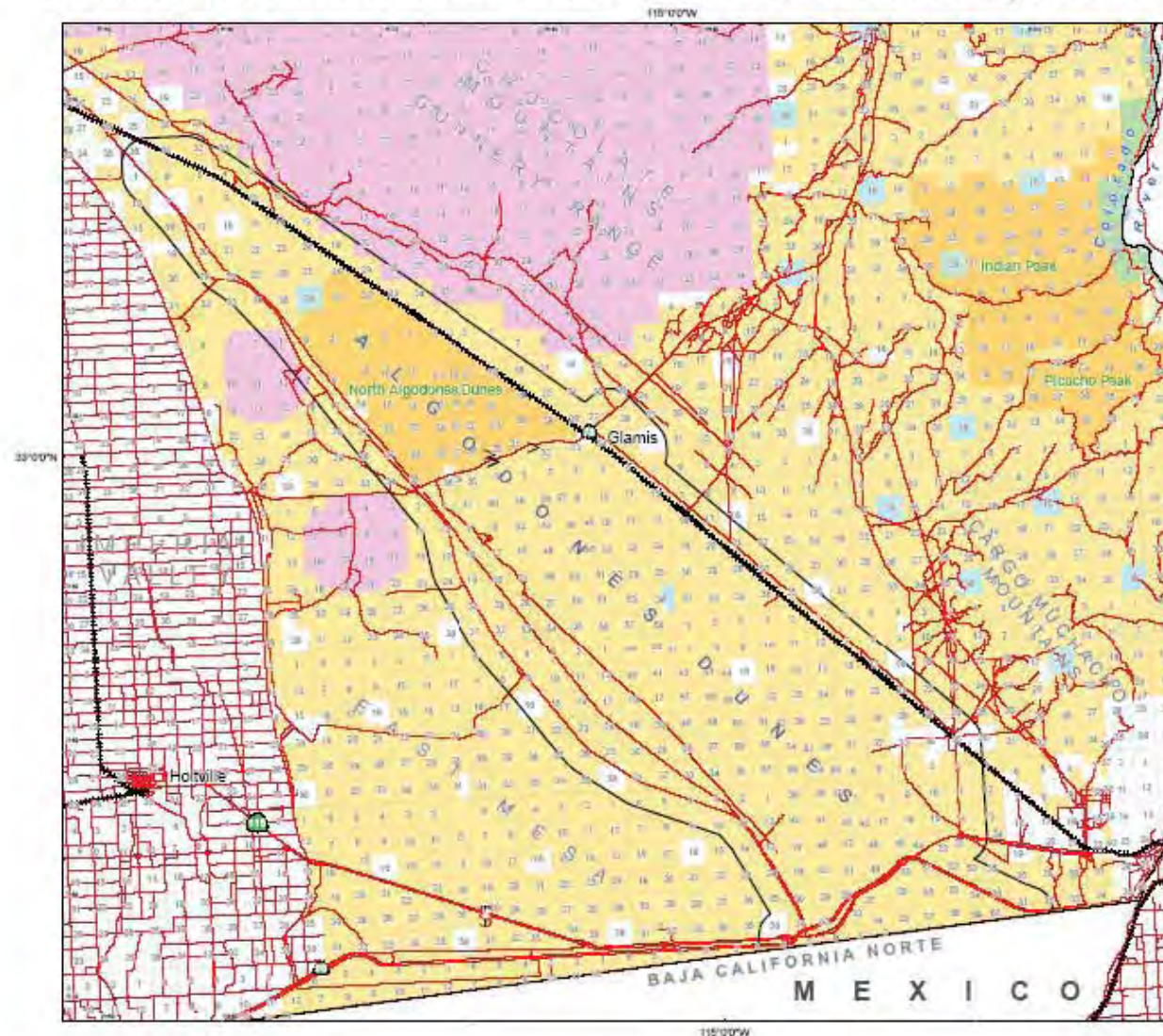
California Academy of Sciences (CAS) houses the type. Additional information was taken from Hardy (1974), Rust (1985) and Van Dam (2006), and from specimens in the Essig Museum, University of California, Berkeley and Entomological Research Museum, University of California, Riverside.



Pseudocotalpa sonoriac, top view.

Distribution for Sonora Dune Scarab Beetle, *Pseudocotalpa sonora*

ADID 2007 BLM



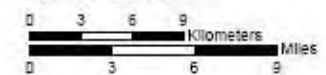
Location




Legend

- > *Pseudocotalpa sonora*
- California State Line
- Algodones Dunes Boundary
- Federal Wilderness**
 - BLM
- Land Ownership**
 - Bureau of Land Management
 - Forest Service
 - National Park Service
 - Bureau of Reclamation
 - US Fish and Wildlife Service
 - Military
 - State Lands
 - County / City / Regional
 - Unclassified

Scales 1:80,000



Map Source


 Prepared by the
 BUREAU OF LAND MANAGEMENT
 California State Office
 Sacramento, California
 95834-0001
 www.blm.gov
 Date Prepared: 08/2007
 Project ID: pseudocotalpa_sonora_20070816

References

- Barr, W. F. 1969. New species of *Hippomelas* and *Acmaeodera* from Western North America (Coleoptera: Buprestidae). *Journal of the Kansas Entomological Society* 42(3):321-335.
- Barr, W. F. and P. D. Hurd, Jr. 1947. Notes on the *Dasymutilla* of the Palo Verde Valley, California with the description of a new species. *Pan-Pacific Entomologist* 23(2):85-90.
- Bohart, R. M. 1982. New species of *Stictiella*. *Journal of the Kansas Entomological Society* 55:593-597.
- Bohart, R. M. 1989. A review of the genus *Euparagia* (Hymenoptera: Masaridae). *Journal of the Kansas Entomological Society* 62(4):462-467.
- Bohart, R. M. and J. E. Gillaspay. 1985. California sand wasps of the tribe Stictiellina. *Bulletin of the California Insect Survey* 27:1-89.
- Cazier, M. A. 1985. New species and notes on flies belonging to the genus *Apiocera* (Diptera, Apioceridae). *American Museum Novitates* (2837):1-28.
- Forbes, G. S. 1988. Three new species of *Efferia* from southern California and Arizona (Diptera: Asilidae). *Annals of the Entomological Society of America* 81(4):554-559.
- Griswold, T. L. 1996. A new *Microbembex* endemic to the Algodones Dunes, California (Hymenoptera: Sphecidae). *Pan-Pacific Entomologist* 72(3):142-144.
- Hardy, A. R. 1971. The North American Areodina with a description of a new genus from California. *Pan-Pacific Entomologist* 47:235-242.
- Hardy, A. R. 1972. A brief revision of the North and Central American species of *Megasoma* (Coleoptera: Scarabaeidae). *Canadian Entomologist* 104(5):765-777.
- Hardy, A. R. 1974. A new species of *Cyclocephala* Latreille from California sand dunes *Pan-Pacific Entomologist* 50(2):160-161.
- Hardy, A. R. 1974. Two new species of *Pseudocotalpa* Hardy (Coleoptera: Scarabaeidae). *The Pan-Pacific Entomologist* 50:241-247.
- Hardy, A. R. 1976. A new species of *Anomala* Samouelle from California sand dunes. *International Union for Conservation of Nature Bulletin* 30(4):365-367.
- Hardy, A. R. and F. G. Andrews. 1974. Observations on *Megasoma* with behavioural notes on some lamellicorn beetles associated with sand dunes (Coleoptera: Scarabaeidae, Lucanidae). *Pan-Pacific Entomologist* 50(2):124-128.
- Hardy, A. R. and F. G. Andrews. 1980. An inventory of selected Coleoptera from the Algodones Dunes. A report to the Bureau of Land Management. Insect Taxonomy Laboratory, California Department of Food & Agriculture, Sacramento, CA.
- Hardy, A. R. and F. G. Andrews. 1986. Studies in the Coleoptera of western sand dunes. 2. Notes on four Scarabaeidae from the Algodones dunes system. *Coleopterists Bulletin* 40(2):127-139.

- Kimsey, L. S. and M. S. Wasbauer. 1999. New genera and species of brachycistidine wasps from southwestern North America. *Journal of Hymenoptera Research* 8(1):65-73.
- Manley, D. G. 1928. Synonymy of *Dasymutilla nocturna* Mickel (Hymenoptera: Mutillidae). *Pan-Pacific Entomologist* 75(1):18-22.
- Manley, D. G. 2005. A new color variant of *Dasymutilla atricauda* Mickel from Imperial County, California (Hymenoptera: Mutillidae). *Pan-Pacific Entomologist* 81(3-4):184-185.
- Manley, D. G. and J. P. Pitts. 2004. Two new species of black *Dasymutilla* from Texas and California. *Journal of the Kansas Entomological Society* 77(4):644-649.
- Mickel, C. E. 1928. Biological and taxonomic investigation on the mutillid wasps. *Bulletin of the U.S. National Museum* (143):1-351.
- Mickel, C. E. 1928. Biological and taxonomic investigations on the mutillid wasps. *Bulletin of the U. S. National Museum* 143:1-351.
- Mickel, C. E. and P. J. Clausen. 1983. New species of the genus *Odontophotopsis* subgenus *Odontophotopsis* viereck (Hymenoptera: Mutillidae) of North America. *Annals of the Entomological Society of America* 76(3):539-551.
- Nelson, G. H. 1994. *Agrilus harenus* Nelson, a new species from southern California, with notes on *A. lacustris* LeConte (Coleoptera: Buprestidae). *The Coleopterists Bulletin* 48(3):261-264.
- Nelson, G. H. and C. L. Bellamy. 1996. A revision of the subtribe Hippomelanina: *Hippomelas* Laporte and Gory, *Prasinalia* Casey, *Gyascutus* (Stictocera) Casey, and *Barrellus*, gen. nov. (Coleoptera: Buprestidae). *Journal of Natural History* 30:861-911.
- Pierce, W. D. 1975. *The sand dune weevils of the genus Trigonoscuta with a correlation of their anatomy to the geological history of our coast lines*, iii + 162 pp.[+2 pp. Addendum II, unnumbered], Orange, CA.
- Potts, R. W. L. 1976. New species of North American *Anomala* (Scarabaeidae: Anomalinae). *Pan-Pacific Entomologist* 52:220-226.
- Rust, R. W. 1985. Notes on the biology of *Pseudocotalpa giulianii* Hardy (Coleoptera: Scarabaeidae). *Pan-Pacific Entomologist* 61(2) 1985:105-109.
- Schuster, R. M. 1958. A revision of the Sphaerophthalminae Mutillidae of America north of Mexico, II. *American Entomologist* (N.S.)37:1-130.
- Timberlake, P. H. 1968. A revisional study of the bees of the genus *Perdita* F. Smith, with special reference to the fauna of the Pacific Coast (Hymenoptera, Apoidea) Part VII. *University of California Publications in Entomology* 49:1-196.
- Timberlake, P. H. 1980. Supplementary studies on the systematics of the genus *Perdita* (Hymenoptera, Andrenidae) Part 2. *University of California Publications in Entomology* 85:1-65.
- Van Dam, M. and A. 2006. Description of the larva of *Pseudocotalpa sonora* Hardy (Scarabaeidae: Rutelinae: Rutelini) with notes on life history. *Coleopterists Bulletin* 60(1): 31-36.

- Van Dam, M., A. Van Dam and M.D. Wilcox. 2006. Description of the third instar larva and adult male of *Megasoma sleeper* Hardy (Scarabaeidae: Dynastinae). *Coleopterists Bulletin* 60(1): 59-67.
- Velten, R. K. and C. L. Bellamy. 1987. A new genus and species of North American Coroebini Bedel with a discussion of its relationships within the tribe (Coleoptera: Bupresidae). *Coleopterists Bulletin* 41(2):185-192.

Table 1. Status of our knowledge of the insects reported as endemic to the Algodones Dunes. This list includes species listed in websites and unpublished literature as endemic to the dunes as indicated by an asterisk (*).

Genus species	Endemic to the Dunes	Life History Category	Larval stages
HYMENOPTERA			
<i>Perdita algodones</i>	yes	melliferous	unknown
<i>Perdita flavicincta</i> *	yes	melliferous	unknown
<i>Perdita frontalis</i> *	yes	melliferous	unknown
<i>Perdita glamis</i>	yes	melliferous	unknown
<i>Habropoda</i> n. sp.	yes	melliferous	unknown
<i>Dasymutilla imperialis</i>	no	parasitoid	unknown
<i>Dasymutilla nocturna</i>	no	parasitoid	unknown
<i>Odontophotopsis villosa</i>	no	parasitoid	unknown
<i>Spherophthalma ecarinata</i>	yes	parasitoid	unknown
<i>Microbembex elegans</i>	yes	scavenger	unknown
<i>Stictiella villegasi</i>	yes	predator	unknown
<i>Euparagia</i> n. sp.	yes	predator	unknown
<i>Sedomaya glamisensis</i>	yes	parasitoid	unknown
COLEOPTERA			
<i>Lepismadora algodones</i>	yes	phytophagous	unknown
<i>Prasinalia imperialis</i>	yes	phytophagous	unknown
<i>Agrilus harenus</i>	yes	phytophagous	unknown
<i>Anomala carlsoni</i>	yes	phytophagous	unknown
<i>Anomala hardyorum</i>	yes	phytophagous	unknown
<i>Cyclocephala wandae</i>	yes	phytophagous	unknown
<i>Pseudocotalpa andrewsi</i>	no	phytophagous	unknown
<i>Trigonoscuta rothi rothi</i>	yes	phytophagous	unknown
<i>Trigonoscuta rothi algodones</i>	yes	phytophagous	unknown
<i>Trigonoscuta rothi imperialis</i>	yes	phytophagous	unknown
<i>Trigonoscuta rothi punctata</i>	yes	phytophagous	unknown
DIPTERA			
<i>Apiocera warner</i>	yes	predator	unknown
<i>Efferia macroxipha</i>	yes	predator	unknown

Table 2. Natural history of species endemic to the Algodones Dunes.

Genus species	Seasonal Activity Period	Collecting Techniques	Food Type
HYMENOPTERA			
<i>Perdita algodones</i>	April	net, malaise trap	nectar, pollen
<i>Perdita flavicincta</i> *	unknown	net, malaise trap	nectar, pollen
<i>Perdita frontalis</i> *	July	net, malaise trap	nectar, pollen - <i>Eriogonum</i> , <i>Coldenia</i>
<i>Perdita glamis</i>	June	net, malaise trap	nectar, pollen
<i>Habropoda</i> n. sp.	April	net	nectar, pollen
<i>Spherophthalma ecarinata</i>	April, July, Sept.	black light, pitfall	parasitoid
<i>Microbembex elegans</i>	Sept, Oct.	black light, pitfall	scavenger on dead insects
<i>Stictiella villegasi</i>	Oct., Nov.	net, malaise trap	predator on Lepidoptera
<i>Euparagia</i> n. sp.	June, July	net, malaise trap	predator
<i>Sedomaya glamisensis</i>		black light, pitfall	parasitoid
COLEOPTERA			
<i>Lepismadora algodones</i>	June-Sept.	net	wood - <i>Tiquilia</i>
<i>Prasinalia imperialis</i>	June, July	net	wood - <i>Eriogonum deserticola</i>
<i>Agrilus harenus</i>	June, July, Sept.	net	wood - <i>Croton wigginsii</i>
<i>Anomala carlsoni</i>	March-May	black light, pitfall	root feeder
<i>Anomala hardyorum</i>	Feb.-June	black light, pitfall	root feeder
<i>Cyclocephala wandae</i>	July-Aug.	black light, pitfall	root feeder
<i>Trigonoscute rothi rothi</i>	Jan.-March	pitfall	root feeder
<i>Trigonoscute rothi algodones</i>	April	pitfall	root feeder
<i>Trigonoscute rothi imperialis</i>	unknown	pitfall	root feeder
<i>Trigonoscute rothi punctata</i>	unknown	pitfall	root feeder
DIPTERA			
<i>Apiocera warner</i>	Sept.	net, malaise trap	generalist predator
<i>Efferia macroxipha</i>	Sept.	net, malaise trap	generalist predator